The Builder.

VOL. LXXIV. NO. 2872. FEB. 19, 1898.

ILLUSTRATIONS.

Bradford Architecture :—

The Town Hall (Messrs. Lockwood & Mawson); Market-street, showing the Exchange ..... *Double-Page Ink-Photo.*

The Yorkshire Penny Bank (Mr. J. Ledingham) ..... *Single-Page Ink-Photo.*

St. George's Hall (Messrs. Lockwood & Mawson) and The Bradford Banking Company (Messrs. Andrews & Delaunay) ..... *Single-Page Ink-Photo.*

The Technical College (Mr. T. C. Hope); The Market (Messrs. Lockwood & Mawson); and London and Midland Bank (Mr. J. Ledingham)..... *Double-Page Ink Photo.*

St. John the Evangelist Church (Messrs. T. H. & F. Healey); The Post Office; The Prudential Assurance Buildings (Messrs. A. Waterhouse & Son); The Mechanics' Institute (Messrs. Andrews & Pepper); All Saints' Church (Messrs. T. H. & F. Healey); and St. Clement's Church (Mr. E. P. Warren) ..... *Double-Page Ink-Photo.*

Blocks in Text.

Bradford Architecture :—

The Swan Arcade ..... Page 170

The Parish Church ..... ,, 171

A Warehouse in Leeds-road ..... ,, 171

A Warehouse ..... ,, 172

Wool Warehouse, Commercial-street ..... ,, 173

Bickett's Bank ..... ,, 174

Bradford Architecture—*continued.*

St. Catherine's Home, Manningham ..... Page 175

St. Luke's Church ..... ,, 176

Congregational Chapel and Schools, St. Mary's-road, Manningham ..... ,, 177

St. Margaret's Church ..... ,, 178

Great Horton Board School ..... ,, 178

The Royal Victoria Nurses' Home ..... ,, 179

Diagrams Illustrating the Students' Column ..... Pages 187 and 188

CONTENTS.

The Architecture of our Large Provincial Towns. XIII.—Bradford 169

Notes 178

The Italian Renaissance 180

Bradford Illustrations 182

Arts and Crafts Exhibition, Liverpool 182

The Surveyors' Institution: Surveyors as Arbitrators 183

The London County Council 184

The Clerks of Works' Association: Annual Dinner 185

Applications under the 1894 London Building Act 186

Architectural Societies 187

Competitions 187

Eastleigh Public Offices Competition 187

Text-Books of French Architecture 187

Students' Column: The Calculation of Strength of Materials and Resistances.—VIII. 187

Books Received 188

General Building News 188

Sanitary and Engineering News 18

Foreign 190

Miscellaneous 190

Capital and Labour 191

Legal 191

Meetings 192

Recent Patents 193

Some Recent Sales of Property 193

Prices Current of Materials 193

The Architecture of our Large Provincial Towns.

XIII.—BRADFORD.

BRADFORD is one of those towns which have practically grown up during the modern manufacturing era, and which, in an architectural sense, have no history to speak of before the present century. The only ancient structure of any importance is the parish church of St. Peter's, a late fifteenth century church with a very poor nave arcade, and which has externally gone through two or three modern repairs or restorations, the last in 1870. The tower, of which we give a sketch (fig. 1), is a low-proportioned but solid-looking erection which derives a good deal of character from the treatment of its buttresses, and is by far the best portion of the church; a local guide-book states that it is "about fifty years later" than the body of the church; we should imagine the truth to be the other way. The site is traditionally said to have been occupied by a Norman church previously, which is quite possible, although the history of the town has not apparently been traced back to the Norman period; at all events there was no doubt an earlier church, whether Norman or not, on the same site, since a charter for holding weekly markets in the town was granted as early as 1256, so that the place must by that time have been a recognised centre in the district. The special tendency of Bradford towards a trade in clothing stuffs seems to have been noticeable in Leland's time, who records "it standith much by clothing"; and later, in 1773, the "Piece Hall" was erected specially for the sale of "pieces" of cloth; its name and position still have record in the narrow passage called "Piece Hall Yard," opening out of Kirkgate.

The modern growth of Bradford, however, only commenced with the early days of the present century, and probably received its first impulse from the establishment of the Low Moor and Brierly iron-works (afterwards incorporated into one concern) in 1788 and 1810 respectively, for though Bradford is not itself an iron-working city, the near neighbourhood of these great iron-works, almost at its gates, must have indirectly promoted the increase and importance of the town; and accordingly it is just at this time, in the first years of the present century, that we find a Board of Commissioners established for providing for the lighting and cleansing of the town, their powers remaining in force till the incorporation of the town in 1847. The dignity of a "city" Bradford obtained officially only last year.

The tendency of towns in the undulating country of the Yorkshire moors is, naturally, to settle down in the low ground between the hills, where there will be shelter from the bleak air of the uplands, and tolerably level communication, by means of the valleys, with other places; and in its earlier days Bradford must have presented the same appearance which some smaller towns in the district still present; a collection of buildings in a dip of the country, surrounded by rising ground. In its present condition it has to a considerable extent climbed the slopes, though the most important portion of the city still remains that on the original low level. It is one of the most irregular of cities; not a straight line or a central axis in it; and the main streets which radiate from the centre probably follow to a great extent the lines of old country roads. This irregularity is one of the main characteristics of Bradford; even the so-called "squares" are merely irregularly-shaped openings left between the lines of three or more streets; even in the suburban districts there does not seem to be a single instance of a symmetrically planned square or open place. Two local circumstances further affect the architectural character of the city. Bradford is almost built, one may say, on a stone quarry, and consequently stone is so plentiful that brick is nowhere to be seen though probably used for backing the external walls in the best class of buildings; to the eye it is completely a stone town In the smaller buildings a great deal of what may be regarded as quarry "spoil" is used in thin courses which, where the walls are discoloured by smoke and weathering, have at a distance somewhat the appearance of brickwork, though on closer inspection it is seen that the courses are much more irregular both in depth and in the length of the stones. This coursed stonework in thin courses of varying depth, and with long and short pieces disposed just as they come to hand, is in itself a more picturesque form of walling than is furnished by ordinary brickwork, but unfortunately it is the only picturesque element in most of the smaller street houses, which are in general style as

Fig. 3.—The Swan Arcade (Messrs. Milnes & France).

uninteresting and mechanical as can well be. That houses built of this irregular stone work might have a pleasing and picturesque appearance without any additional cost is shown by the example of a few of the older houses at Horton Green, probably built before the town had stretched up to this point. These, with their mullioned windows, or sash windows in small panes (both arrangements are seen), are really pleasing and picturesque, and all the streets of small houses in the modern town might have been the same, whereas they have only the air of commonplace respectability and dulness. This is one among other indications afforded by Bradford, that the mental or moral atmosphere of a manufacturing town is not favourto a feeling for the picturesque of architecture. The other influence referred to is the requirement for large mills and warehouses, which form a very important feature in the street architecture of the city. These, in the best streets, are built of hewn stone and in a somewhat dignified style, and would impart an air of distinction to the city but for two drawbacks—the sombre hue which they assume from weather and smoke stain, and the insufficient width of the streets. Well-street and the western portion of Leeds Road, for instance, are nearly lined with these large stone warehouses, but the streets are not wide enough to give them their full effect, and the result, combined with the sombre tone, as aforesaid, of the masonry, is depressing. It is true that these warehouse buildings are not for the most part treated with very great architectural originality or character, but that they would nevertheless have their effect in a fresher stone and with a wider space to see them in is evident from the instance of the great new block at the top end of the street called Cheapside. This building, a wool-merchant's warehouse, is very simply treated—the first floor windows with a cornice mould surmounted by a small pediment, the next tier with the cornice only without the pediment, the remaining windows perfectly plain openings, and the whole crowned by a very simple and unpretending cornice; yet this great mass of new stonework of admirable workmanship, seen at the top of the open street flanked by the Midland Station-yard, has a really striking and almost grand effect, though it will no doubt lose much of this when the stone gets smoke-blackened. The originating cause of this darkening of the stone is symbolised in the number of tall chimneys which, though not found quite in the centre of the town, are conspicuous in every comprehensive view of Bradford from higher ground, and give a peculiar effect to the picture; not the less so that some of them are visibly out of the perpendicular.

The Town Hall, completed in 1873, from the designs of Messrs. Lockwood & Mawson, who gained it in a competition which excited great interest in the architectural world at time, stands, like everything else at Bradford, at an oblique angle with its surroundings, along one side of a nearly triangular space, which is called "Town Hall Square." The lithograph illustration (from a photograph) may serve to remind readers who have forgotten it of the character of the building. Though designed in a style of revived Gothic the taste for which has now evaporated, it must be admitted to be an exceedingly favourable specimen of its school, and one of the best provincial town halls of its date. There is a breadth and unity of treatment about; the several tiers of windows are very well contrasted, the middle tier emphatically indicating the principal floor. The weak point is in the treatment of the ends; they should have been raised and emphasised more; as it is the design looks as if it were suddenly cut off at the ends, and there is nothing to balance the tower and the centre pavilion. The tower, which, in its general lines and effect, is an obvious reproduction of that of the Palazzo Vecchio at Florence, is a conspicuous object from many of the streets, and its decidedly mediæval style and outline suit very well with the irregular character of the city; looking back along Market-street, for instance, with the tower of the Exchange in the foreground and that of the Town Hall peering over the houses to the left of the distance, the effect is very picturesque.* There is nothing else of much interest in Town Hall Square; at the upper end there is an example, in a small inn, of what seems to be a bit of old Bradford street architecture, a low front with two semi-circular bays going up to the eaves; and at the under end, opposite the east wing of the Town Hall, is the respectable but uninteresting Mechanics' Institute, a heavy Classic

* This view up Market-street is shown in the small illustration in the corner of the Town Hall lithograph, but it does not convey the real effect; street photographs are nearly always, as in this case, deceptive as to distance and perspective; Market-street is really a rather short street, and the Town Hall appears much higher up in the air, so to speak, from that point, or much closer, than it seems in the photograph. On the right in the foreground is seen Bradford Old Bank, one of Mr. Waterhouse's earlier buildings.

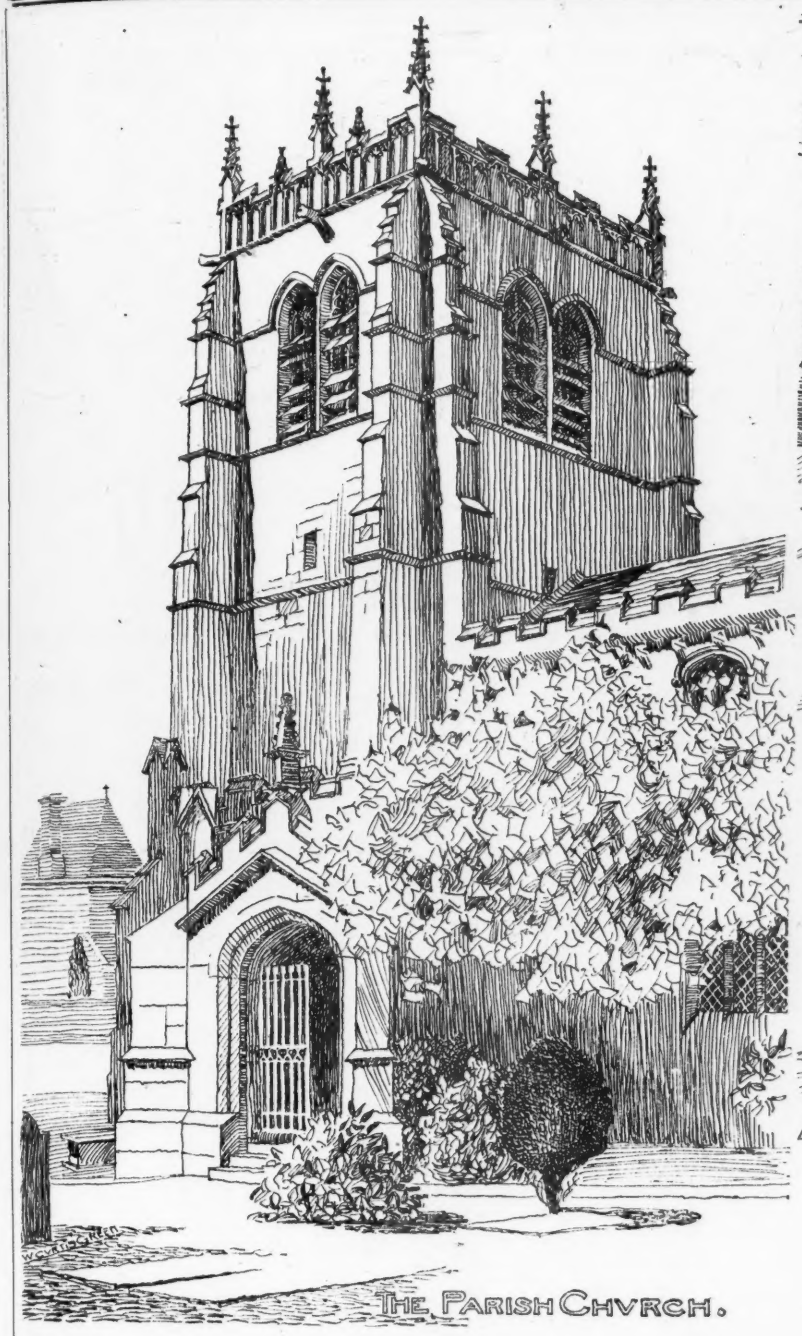


Fig. 1.

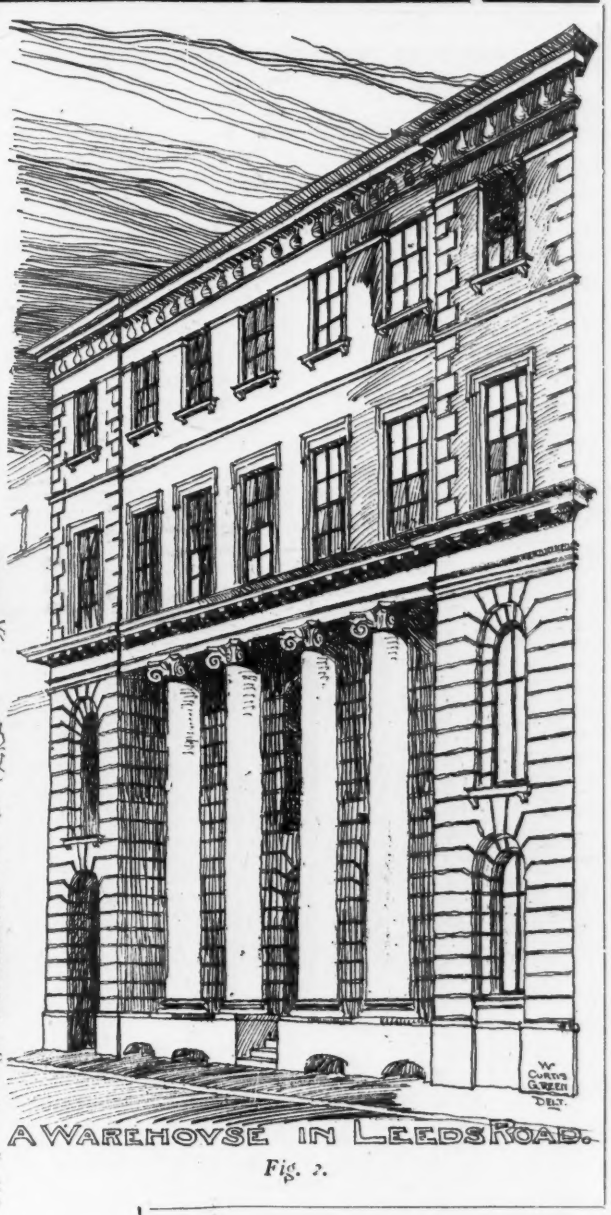


Fig. 2.

building; and at the street angle beyond this is Messrs. Waterhouse & Sons' Prudential Assurance building (see lithograph), a complete interloper in Bradford, architecturally speaking, for it ignores the local style and materials altogether, being a brick and terra-cotta building in the usual "Prudential" style, and one of the best and most elegantly designed which its architects have produced. We presume that, as with branch post-offices built in different towns by the Office of Works, it is considered by the Prudential Assurance Company that their offices in every town should bear an unmistakable family likeness; otherwise the accomplished architects would perhaps agree with us in thinking that it would have been of more interest to have taken the local materials and treated them in a manner in accordance with the general character of the city.

Turning to the right round the east end of the Town Hall, we find in Bridge-street the "flank front" (as a military writer would put it) of St. George's Hall, the principal meeting hall of Bradford (for the Town Hall contains no large hall) also from the designs of Messrs. Lockwood & Mawson, but built twenty years earlier than the Town Hall, before the Gothic revival fever had fully developed. Our lithograph shows rather too much of the somewhat bald end elevation of the building and too little of the street façade, which is quite one of the best bits of architectural design in Bradford, and as good and refined a piece of "Classic" as any town in England can show. It is "academic" architecture of course, but it is thoroughly good of its kind, well proportioned as a whole, and refined and effective in detail. The exterior agrees better with the interior than is sometimes the case in Classic designs of this school, as the lower cornice, beneath the Order, pretty nearly represents the floor level of the concert room, which is reached by stairs direct from the outer doors, the intermediate portions of the basement being shops or offices. The hall is well designed for acoustics; the decorative treatment is much what one finds in many Classic concert-halls of that period; neither worse nor better.

The two principal streets of the city are Market-street, running north-easterly from the Town Hall to Forster-square (which, like Town Hall-square, is triangular), and Kirkgate, which, from a more northerly point, joins the end of Market-street at the "square."

The general aspect of Market-street is dignified, and it includes some important buildings, notably the large Exchange building (which stands on the site of the old market), on the north-west side of the street, and on a nearly triangular site between the junction of Market-street and "Hustlergate," a singularly appropriate name, whatever its origin, for the neighbourhood of an Exchange.* The Exchange is also Messrs. Lockwood & Mawson's (date 1867), but by no means equal to the Town Hall; it is a rather coarse and violent piece of revived Early Gothic of somewhat French tendencies, with large polished granite columns and big "early pointed" windows with plate cusping, a row of heads in high relief sticking out of medallions only just large enough to contain them, as if they were looking through collars, have an almost ludicrous effect. Internally the space is divided into three aisles, with a rather heavy but not ineffective open timber roof. In spite of coarse detail, however, the Exchange is redeemed by the bold treatment of its narrow end, with the tower with a vaulted open porch at the ground level and the clock stage and spire above; when you are far enough off from this it makes an undoubtedly picturesque and effective feature in the street view. Other buildings to be noticed in Market-street are the London and

* In Chicago and some other very advanced America cities, to do business actively is to "hustle." Is there any etymological connection between that expression and "Hustlergate"?

d

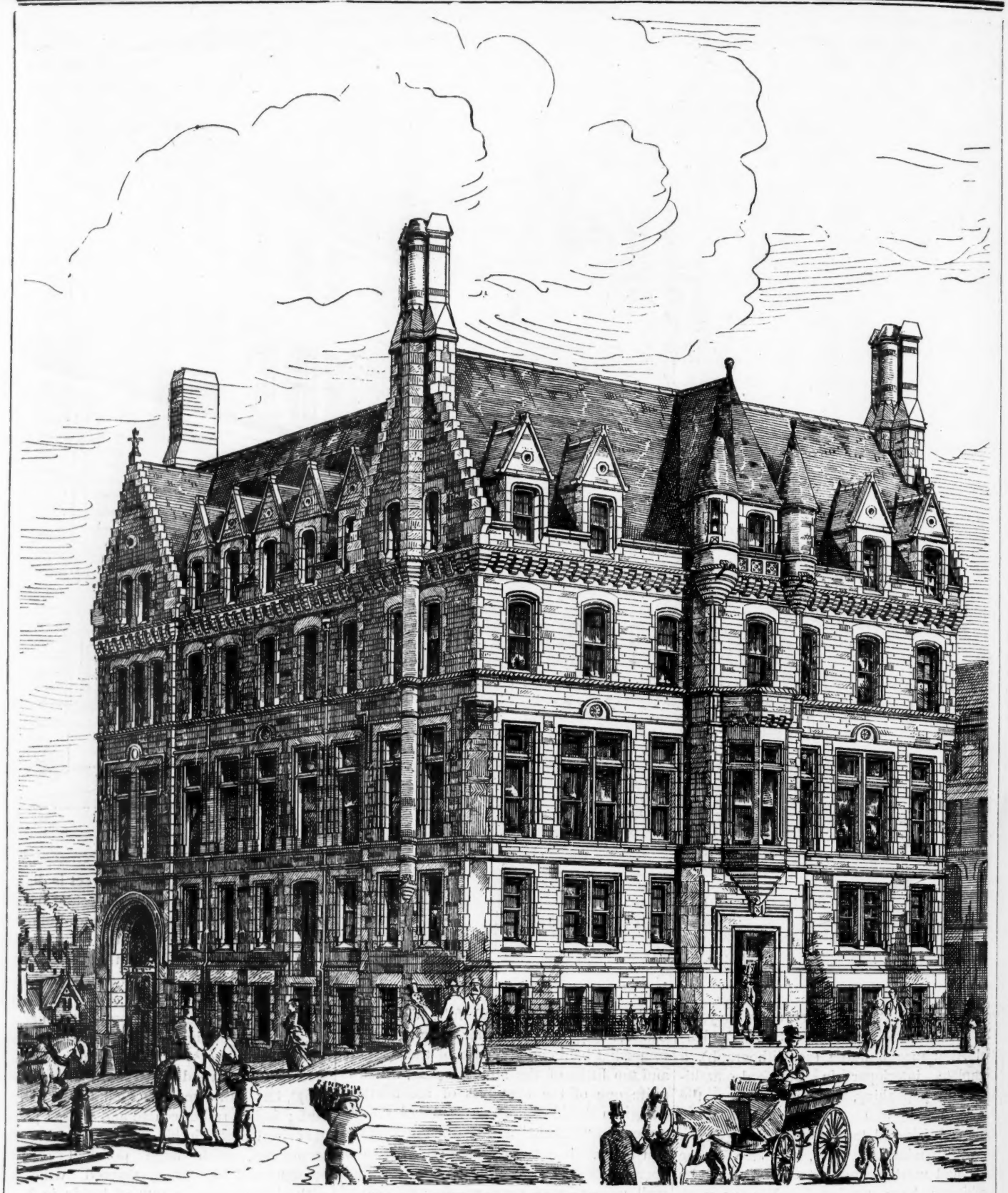


Fig. 4.—A Warehouse (Mr. G. Corson).

Midland Bank on the south-east side (see lithograph), an effective free Classic front—the column and pilaster in the middle stage of the design are rather too long in proportion; the front of the Swan Arcade (fig. 3), a rather extensive arcade with a double "transept;" the Bradford Old Bank (already referred to), on the north-west side, a round-arched Gothic building of Mr. Waterhouse's earlier manner—added to by Mr. Ledingham, effectively contrasted with the Classic "Bradford District Bank" on the opposite side, by Messrs. Milnes & France, a building with some good treatment in detail, especially in the design of the ground floor piers. Kirkgate, in spite of its picturesque and old-sounding name, contains no building of particular interest; the principal façade of the modern market (see lithograph) fronts on it, also by Messrs. Lockwood and Mawson, who seem "in the brave days of old" to have had things pretty much their own way in Bradford; but considering that these buildings were erected at about the same time as the Town Hall, one would say that the architects' strength had gone out of Classic into Gothic; the façade is simple, pleasing enough, but entirely devoid of force or character.

Behind the Exchange, in Hustlergate, the Bradford Joint Stock Banking Company's building shows a powerful example of revival Gothic of rather French type, with deeply revealed pointed windows with double recessed nook shafts of polished marble in each jamb, a building exceedingly well carried out according to its type, and in a large and liberal manner. Coming down into Forster-square, one finds a *place* with architectural and picturesque possibilities which have unfortunately only been very partially realised. In the centre is a bronze frock-coated statue of W. E. Forster, from whom the *place* is named, with finger up as if marking a point in a Parliamentary speech; around his pedestal is a dreary little attempt at some ornamental beds and walks. The south side of the triangle is occupied by large dingy looking stone-fronted warehouses; the north side by the flank of the Midland Company's Station and Hotel, at present in new stone—

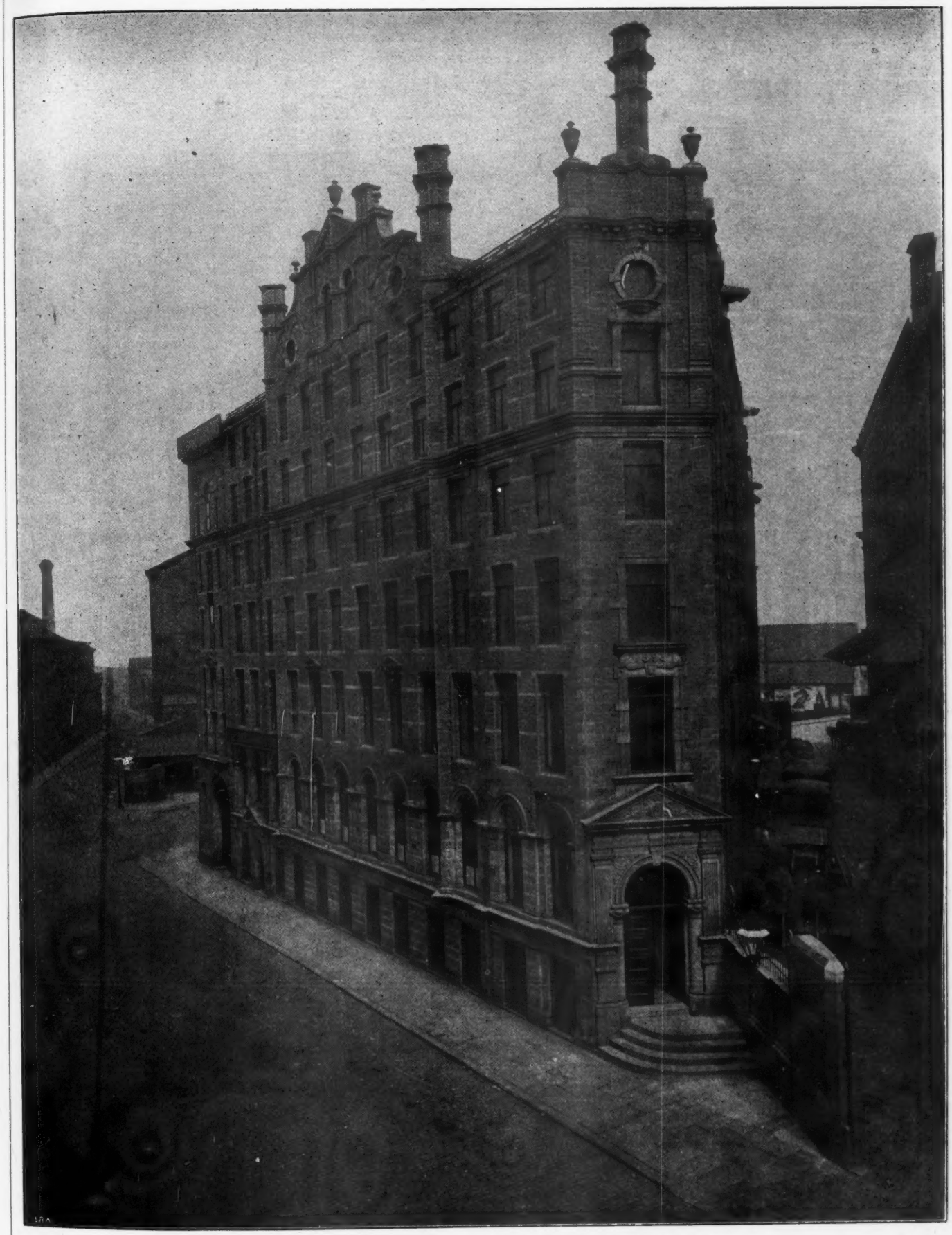


Fig. 5.—Wool Warehouse, Commercial-street (Mr. Rhodes Calvert).

that will also become sombre in time of course—and highly creditable to their architect, Mr. Trubshaw, considering what railway hotel and station architecture usually are. The hotel and the side façade of the station are at least unpretentious and in good taste, only why did they spoil the whole thing by that great flaring blue and white enamel name board over it? It would surely have been possible to have made the name of the station part of the architectural design, in a decorative manner; that blue and white name-board spoils the whole square, and quite unnecessarily. At the east end of the *place*, the base of the triangle, is the Post-office (see lithograph), built a few years ago by the Office of Works, and more agreeable than some of their post-offices, because less pretentious; the hipping of the central roof, however, so as to leave a gap between that and the end pavilions, is imitating one of the worst and commonest faults in contemporary French architecture. By the side of the Post-office is a gateway in modern late Gothic style, with good wrought-iron gates, giving access to a fine wide stone staircase in several returned flights, within retaining walls decorated with a small arcading, and forming the approach to the terraced churchyard of the parish church on the higher level. This is a very well-managed piece of work, carried out by Messrs. Milnes & France. The old tower

Fig. 6.—Beckett's Bank (Messrs. Milnes & France).

of the parish church, on the higher level, looks over the top of the Post-office building with picturesque effect,* and makes an important addition to an *ensemble* which, in spite of drawbacks, is certainly a good bit of town scenery.

In Leeds-road (the portion of it within the city) and Well-street are some of the largest of the street warehouses. Of one of those in Leeds-road we give a sketch (fig. 2), but though this is now a warehouse we should doubt if it was built as such; it looks more as if it had been originally erected as a public building of some kind, and subsequently turned into a warehouse; it is at all events a good bit of Classic architecture of the old school. Messrs. Bottomley's warehouse in Leeds-road is a dignified stone front with round-arched windows, and in Well-street the Titus Salt warehouse is a good building, plain but solid in appearance. What these buildings want, however, is character; they have not the warehouse character, they might do just as well for blocks of offices of the usual kind. Mr. Corson, of Leeds, has sent us a drawing of a warehouse built from his design (fig. 4), which has a more strongly marked character (the actual building we did not see); and a

* The tower ought to show thus in our small view of the Post-office; why it does not we cannot say, unless the photographer wiped it out to give more effect to what he probably regarded as the more important building.

Fig. 7.—St. Catherine's Home, Manningham (Mr. F. Ledingham).

new warehouse in Commercial-street close to Forster-square (fig. 5), by Mr. Calvert, is a very meritorious building, with a good deal of originality of treatment, and yet unmistakably a warehouse. Also in the near neighbourhood of Forster-square, but off the Leeds-road, up Currer-street and one or two other short streets, is a whole nest of massive but not very interesting warehouses of classic type, one of which has the angle treated with no less than five tiers of pediments supported by coupled Corinthian columns, one above the other up to the roof line, an arrangement which shows more ambition than architectural invention.

Of other buildings near the central portion of the town we may mention that of the Yorkshire Banking Company at one end of Tyrrel-street, thoroughly well treated as a piece of bank architecture, with strong rusticated piers in the ground story, and an angle entrance with a carved segmental pediment carried by coupled columns, and some good decorative detail around the doorway. Angle entrances, we may observe, seem to be much in favour in Bradford, which is naturally the case where, owing to the irregular street lines, there are so many irregularly shaped lots of building land. We find the angle entrance again in the rich and handsome building of Beckett's Bank (fig. 6), opposite the Midland Hotel. Darley-street is supposed to be one of the best in the town, and the front of the Royal Hotel at the top, by Mr. Ledingham, is a very pleasing bit of free Classic; the buildings ranging down the west side of the street, including the Free Library and Museum and one façade of the Market, are however of rather a commonplace character. But on the east side, at the corner of Darley-street and Kirkgate, is a building, that of the Bradford Banking Company (see lithograph), which is of more than average excellence. The contrast between the bold plain rusticated ground story, with its cantilever cornice, and the elegant treatment of the order in the upper story, is most effective. The small windows above the main first floor windows, which certainly rather spoil the effect, are we believe an after insertion. We should have mentioned also, near the west end of the Town Hall, the group of new offices flanking Town Hall-street, treated in a free Classic style with gables of varied design, and which are picturesque and original both in general effect and in detail. The opposite side of this street, where there is a good deal of old tumble-down building and blank spaces, is we hope only waiting for opportunity to be treated in a fashion worthy of the commencement already made in this quarter.

Exploration of the more outlying parts of the town is rendered easy by the excellent service of steam tram-cars which run in all directions, and seem to make nothing of the heavy gradients, but the result of such exploration is not very enlivening, except in the direction of Manningham, the principal residential suburb, occupying the highest ground in the neighbourhood. Even in this direction the greater portion of Manningham-lane is bordered by mean houses, only diversified by a Board School and one large new building only half up. At the acute angle, however, where Manor-row and North-parade converge into Manningham-lane, the Yorkshire Penny Bank has secured a splendid site, which their architect, Mr. Ledingham, has turned to excellent account (see lithograph). The building is richly and picturesquely treated, and the semi-circular entrance end, with its three arched doorways, its loggia above, and small cupola crowning the whole, shows as a central object for a long way down Manningham-lane, and is one of the most effective things in Bradford architecture. The best residential roads in Manningham do not show any houses that are either very large or important or very remarkable for architectural interest; there are two or three good ones here and there, but we understand that the wealthiest class of those who are connected with Bradford reside at Harrogate and other places away from the town. Manningham, however, is a clean well-kept residential suburb (the residential portion of it, that is), with the advantage of a high situation and a beautiful view over the country. The most striking thing, however, in the neighbourhood is the enormous mass, or masses, of the Manningham mills, the main building of which, running round three sides of a square, and with its immense chimney which is a landmark for miles round, would be impressive from its mere scale, whatever its treatment in detail. More might have been made of it in an architectural sense, but the large cornice is a good feature and adds to its effect. Among lesser buildings of the neighbourhood we give an illustration, from the architect's drawing, of St. Catherine's Home (fig. 7), a building which however we did not happen to see. Manningham lies north-west from the city. The direct westerly route outwards, along Thornton-road, takes one through one of the most doleful and depressing regions it would be possible to see; dismal waste spaces strewed with all kinds of *débris*, and equally dismal mills of the smaller and cheaper order, apparently deserted and doing nothing, a testimony probably to the struggle through which Bradford commerce went some fifteen years ago, when there was an attempt made to get up a patriotic movement for the purchase and wearing of Bradford stuffs, in order to give an impetus to home manufacture. The same kind of sight meets us in the opposite direction eastward along Bridge-street and Wakefield-road. North-

Fig. 8.—St. Luke's Church (Messrs. T. H. and F. Healey).

ward, along the Ottley road, which climbs up to very high ground, there seems to be the commencement of a new artisan suburb on the slope of the hill, but not much appearance, so far, of any attempt to take full advantage of the fine site offered on the slope of the hill looking towards the town. On the whole, we have never been in any town in which the poorer streets everywhere seemed more dingy, gloomy, and forbidding than those of Bradford. If there is a new building neighbourhood to be utilised and turned to account, it would surely be worth while to make some effort that it should be less dull-looking than most of the existing poorer districts of the town. In the matter of recreation grounds or parks, it must be admitted, Bradford is not badly off, so far as acreage is concerned. There is Lister Park, at Manningham, which rejoices in a splendid situation on the side of a hill, with the view of another hill opposite, and which in summer ought to be an attractive place enough, but there is rather an air of neglect about it. Among its attractions are a sham Gothic entrance-gate at the lower end, with an indication of a portcullis, and a monument in the middle of the park where the effigies of Sir Titus Salt, "a great, broad-shouldered, genial Englishman," in a realistic sculptured frock-coat, sits somewhat incongruously under a Gothic canopy of the Eleanor Cross type. There is Peel Park, at the top of the hill up Ottley-road, which we had not time to see; and Bowling Park on the south-east side of the town, large in extent but poverty-stricken in style and laying-out, with the usual winding walks and small bushes for them to wind round. There is Horton Park, nearer the town, to the south, with some pretty corners in it, and outside of it "Horton Avenue," a wide straight road which looks promising—on the map; but alas, when we come to look at it, we find that the "Avenue" is a bare stretch of road with a high wall on one side and a railroad on the other. There is width enough; could not the Corporation make an effort to make an "avenue" of it in something more than name? and (to follow up the subject) can they not make a little attempt at tree planting in some other places? Never did we see a town more bare of trees. In most towns there are a few trees to be found here and there; in London, it has been said (perhaps with exaggeration) that there is not a street without a tree somewhere in it. But Bradford is a stony wilderness.* Some trees would surely be a possible and charming addition to Town Hall-square and Forster-square. And what is going to be done with that miserable-looking waste space between Horton-road and Morley-street, within view of Town Hall-square? Surely its present aspect is a discredit to the city.

Bradford is not very strong in churches, and some of the most prominent of them belong to the early period of the Gothic revival, and represent accordingly a phase of architectural taste or architectural opinion which must now be regarded as out of date. It is only fair, however, to endeavour to regard such works from the point of view of the time when they were carried out, and in this sense All Saints', Horton Green (see lithograph), which is one of the largest and most important of the Bradford churches, must be regarded as a good example of its time (about thirty years since). The smaller church of St. Luke's, Manningham, by the same architects (fig. 8) is a better and more refined work, in late Gothic style with some modern

* There is a small tree indicated in our sketch of the parish church tower, but we fear it owes something to the draughtsman's imagination.

touches about it; the tower shown in the drawing is not yet built, there is only a small octagonal bell turret. The interior has a spacious appearance in comparison with its size, and has a generally good effect, only marred by one or two details; the rather exuberant character of the carving on the nave piers, and the tinted glass used in the windows. The Congregational church at Manningham, by the same architects (fig. 9) is also worth attention, and represents apparently a later phase in revived Gothic.

St. Margaret's Church (fig. 10) appears, in the sketch kindly lent to us by the architects, as a picturesquely grouped exterior; the building itself we did not see. The Roman Catholic Church at Manningham is a rather characteristic quiet building externally, with an octagonal turret near each end; the exterior detail is so very reticent that one is rather taken aback at the sight of the great coarse black marble base-moulds to the nave piers in the interior. But the only church, as far as we saw, which really represents the present feeling in Gothic is Mr. E. P. Warren's St. Clement's (see lithograph) in an out of the way situation at the end of Barkerend-road, leading to a half-formed suburb north-east of the city. This is a most refined building in exterior treatment; not at all showy, but every detail has been cared for; the treatment of the wrought-iron boundary railings, for example, is quite original and characteristic. Why the masonry is finished rough on the south side and tooled on the remainder we do not quite understand. The ceiling internally has been painted and decorated by Mr. Frampton and Mr. Anning Bell.

The Board Schools at Bradford are tolerably numerous and are in general well treated architecturally; and it is noticeable that they are in a great variety of styles; there seems to be no accepted Board School type of architecture, as there is in London and in some other cities. We give an illustration of one of them (fig. 11), in pronounced Queen Anne style; there is a large block in Killingham-road in domestic Gothic style, another very large one opposite St. Clement's Church which has the merit of being in no special style, but is a fine and broadly treated building of impressive aspect, though with no more of architectural pretension than befits a Board school. As a building of somewhat the same class architecturally—one in which suitable and simple treatment is required rather than architectural display, we may notice the illustration of Messrs. Milnes & France's Nurses' Home (fig. 12), which we only know through this illustration, but which appears to be a very good example of the manner in which a certain degree of character may be imparted to a utilitarian building, without departing from simplicity and economy.

It is the want of this quality of "character" which is so often felt in the case of buildings for manufacturing purposes and in manufacturing districts. It was impossible o be at Bradford without running over to see the small town of Saltaire, founded and built mainly by Sir Titus Salt as an appendage to his great mills there, which may be said to be almost a part of Bradford industry. And one leaves it with the feeling that a great opportunity has been lost. The small town is clean and neat to a degree, all (naturally) laid out symmetrically and

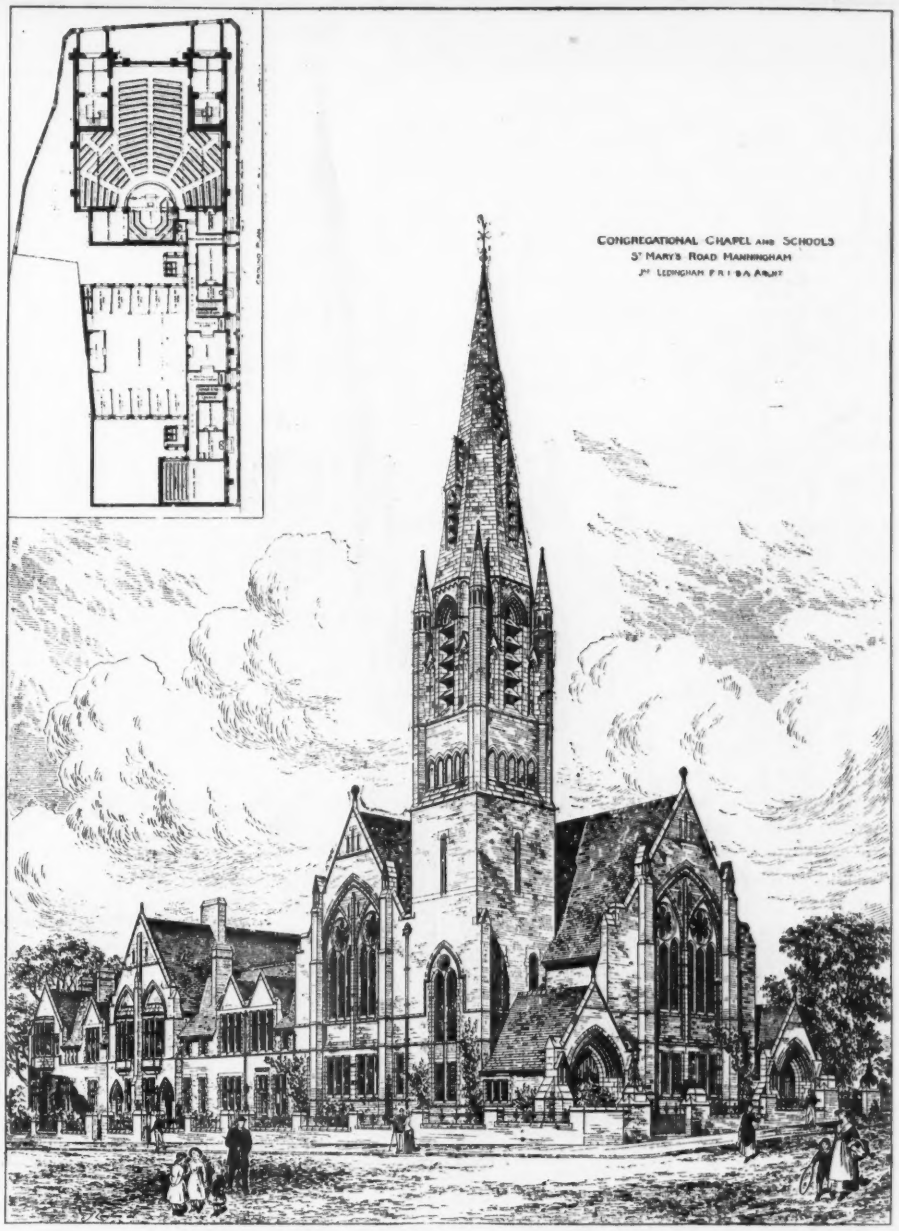


Fig. 9.

with the streets at right angles—to which we have no objection; it would be foolish to lay out a town deliberately for irregular effects. But the rows of small dwelling-houses might have been picturesque and homelike in character, and they are not; they are simply "prim." Some attempt at effect has been made with the schools and the large building opposite to them—which apparently is a kind of town hall—with couchant lions facing each other at each end of the balustrades; there is some originality in the design of the schools; but the whole thing is uninteresting. The Congregational church is a large piece of cold Classic design, with pilasters along the sides and a semicircular colonnaded entrance portico. The huge mill, like that at Manningham, is impressive from its size. But the mistake constantly made in designing these great mills is that of attempting to give them a kind of palatial character, which cannot be carried far enough to be really palatial, or it would be quite out of keeping with the purpose of the building, while at the same time the treatment is deficient in the effect of power and energy which might and ought to be got from such a building. It is rather sad to look, from the high land behind Saltaire, at that glorious undulating landscape with the lights and shadows flying over it, and to find the little town that has been made there so totally at variance with the romantic feeling belonging to the landscape; a mere piece of commonplace put down amid nature's grandeur.

Halifax too tempts the visitor over, from its proximity to Bradford; and is worth seeing for two reasons; for the splendid position of the town, at the foot of a great hill up which parts of it climb in a picturesque uneven manner, and for the sake of one really fine building, Barry's celebrated town hall, which is worth all its reputation, and in fact looks finer in reality than the impression conveyed by illustrations. The tower, with its often illustrated and often imitated square spire, is at the angle of the building, but Barry took care to have it on the centre of the street line leading up to it, so that it can be thoroughly well seen and make all its effect; and a very fine thing it is; a kind of combination of Classic refinement with Gothic multiplicity of detail. Internally the lower portion of it is occupied by a very gracefully designed staircase with a domed ceiling. The centre of the building is occupied by a roofed *cortile*, with a gallery round it, from which, on each floor, the offices and other rooms open, while the upper portion of the court-room beyond is seen through the glazed openings in one side of the gallery. The whole, though some of the details may not command our sympathy at the present day, is a truly fine and original conception, the

Fig. 10.—St. Margaret's Church (Messrs. H. and E. Marten).

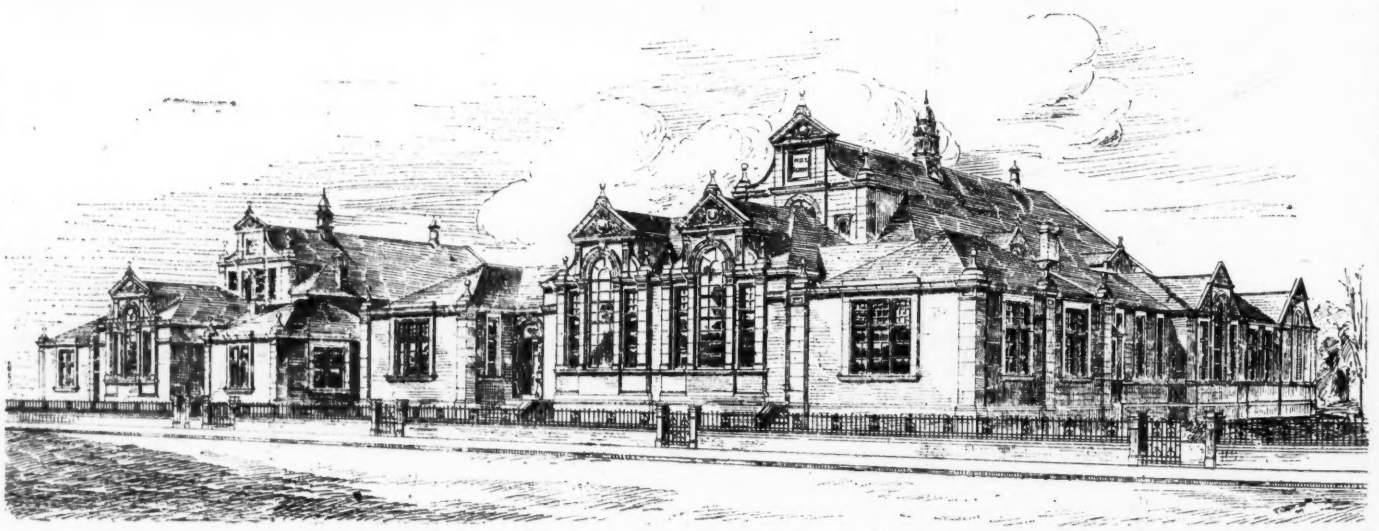


Fig. 11.—Great Horton Board School (Mr. W. J. Morley).

work of a man who was a really original creator in architectural design. It says much for the spirit and ambition of a comparatively small town like Halifax that she could be contented with nothing less than the first architectural mind of his day to design her Town Hall; and it must be admitted that her one great building is superior to anything to be seen in the streets of the greater and more populous neighbour city.*

* This series of illustrated articles was begun in our issue of September 26, 1896. A list of those towns already dealt with, and particulars of future arrangements, will be found on page xviii.

NOTES.

South Kensington Museum.

IN reply to questions asked on Monday night in the House of Commons as to the measures which had been taken for the greater security of the contents of the South Kensington Museum, the First Commissioner stated that the old buildings known as "the Boilers," the temporary building in the inner quadrangle, and the students' refreshment rooms had been removed. Other works in hand are the fireproofing of the room next to the Raphael Gallery, and the improvement of the galleries on the west of Exhibition-road (certainly not before it was necessary). The private residences of the officials are also to be abolished. The questions seem to have been asked solely with a view to the security of the Art Treasures in the building as now existing, but the First Commissioner volunteered the information that a proposal for proceeding at once with the permanent buildings would shortly be laid before Parliament; so that it appears that at last something will be done. It is to be hoped that it will at all events be done in a manner worthy of the nation, and not in a mere cheese-paring spirit of economy.

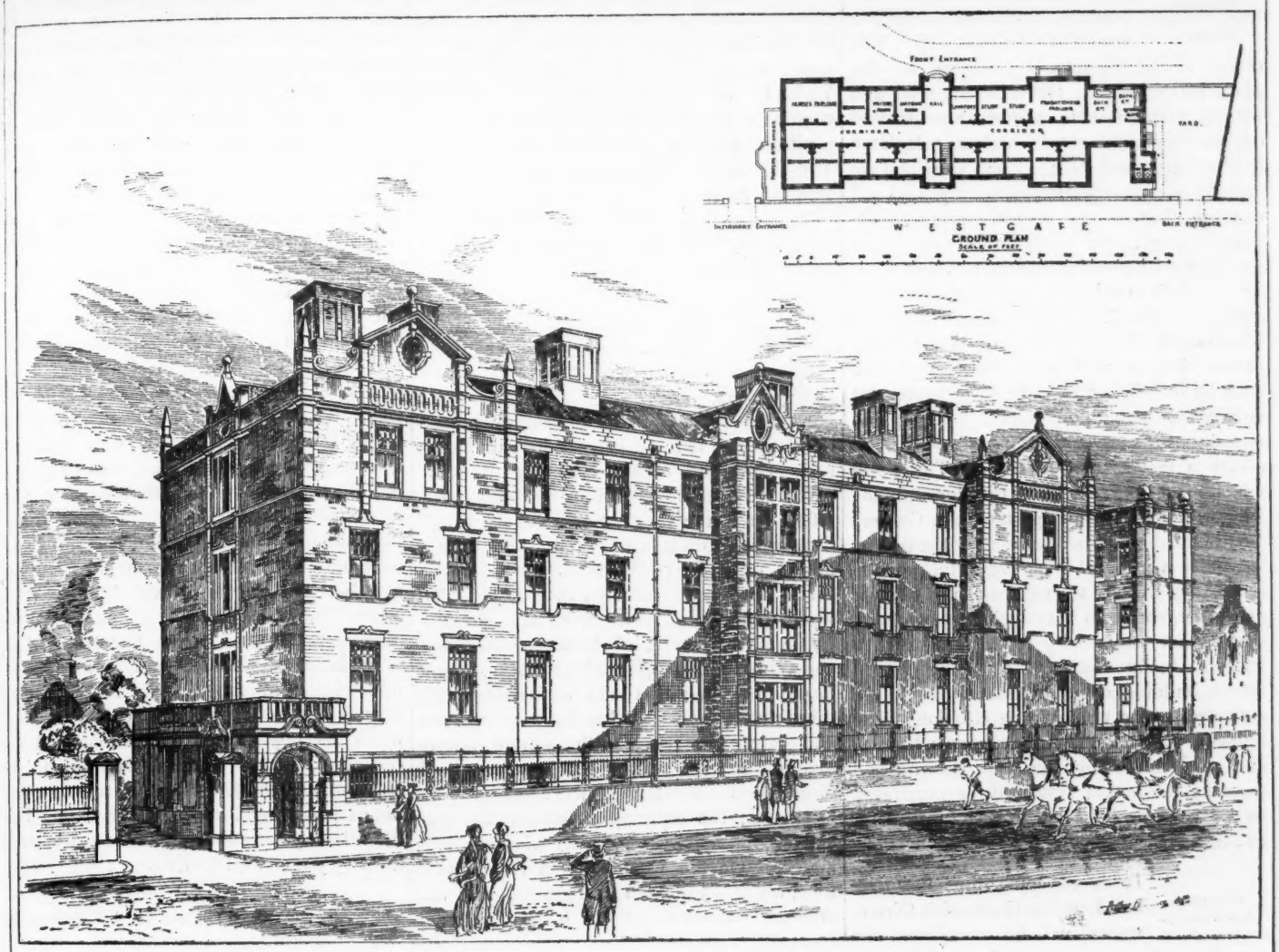


Fig. 12.—The Royal Victoria Nurses' Home (Messrs. Milnes & France).

The Proposed Vauxhall Bridge.

IT appears, from the model and drawings for Vauxhall Bridge exhibited at the last London County Council meeting, that we are at any rate to escape a repetition of Blackfriars Bridge. The method of construction proposed, of granite facing backed by a great concrete casting, is monumental in appearance, and may prove so in reality. But the details are very bad. There is still the engineer's notion that an immense applied column is the proper feature for the front of the pier, and that the basemould of the main pier should be as large as the whole balustrade of the roadway; while the lamp-columns, placed centrally over the applied columns on the pier face, will give the effect of a series of vertical poles on each side of the bridge. Why is not an architect called in to design the architectural details, as would certainly be done in Paris?

The Chantilly Collection.

THE Institute of France has formally entered into possession of the Château of Chantilly, and the collections included in what is now to be called the Condé Museum, the contents of which have been inventoried in five volumes, with indications of the arrangement of the various classes of objects according to the intention of the Duc d'Aumale. The Museum contains 557 pictures, without counting the pictures, engravings and drawings which adorn the Château d'Enghien; 30 enamels; 282 miniatures; more than 200 gems and precious stones displayed in glass cases; and in addition to the equestrian statue of Condé, by Paul Dubois, about 50 statues and busts in marble, among which are three by Chapu ("Jeanne Darc," "Pluto," and "Proserpine"), a "Hebe" by Dezeine, the statue of Bossuet by Guillaume, two bas-reliefs by Jean Goujon, and animal sculptures by Gardet and Auguste Caïn. Among the 12,600 drawings are 111 original drawings by Nicholas Poussin, and more than 500 by Raffet. Besides these are 5,000 engravings, a collection of 3,685 medals, and a library containing 24,000 printed volumes, 1,493 MSS. and 272 parchments. The Château includes besides more than 500 pieces of furniture and other objects of great value—armour, tapestries, &c. There is also a collection of autographs and historical documents of great interest.

The County Council Works Department.

THE discussion on Tuesday at the County Council on the subject of the Works Department was very unsatisfactory. There is no use whatever in debating this question except on some broad points of principle. To base a discussion on a few estimates and figures is mere waste of time. For the time being the Council are prepared to continue this department though it may be on a somewhat lessened scale. That being the case the work should be now carried on for a sufficiently long period to enable some just conclusion to be arrived at on the work as done under the present changed conditions. Whether that work is successful or not can only be ascertained by a very full consideration of all the particulars relating to it for a substantial period of time. Those members of the Council who are opposed to the Council doing their own work as contractors damage rather than improve their cause by piece-meal discussions which any practical man knows are of no value.

The Proposed Line to Henley.

THE opposition to the proposed new railway to Henley appears to be general and strong. It is obvious that the Company have taken no trouble to ascertain the wishes of the locality through which the line passes. But something more important than the making of this new line is involved in this opposition. The Thames Valley has become a playground for London. It is full of charming building sites, obtaining much of their value from their proximity to the river. It is important that this valley should not be spoiled by railway works, whether embankments or bridges. Any lines which in the future are brought into the Thames Valley should be so planned as not to interfere in any way with its scenery. A railway company regards such a place as one which may be utilised for excursion traffic; it thinks Henley may be made an inland Margate. It is this wrong impression which has to be combated. The Thames Valley should be kept as free from injury as any of the commons in the country which it is now the policy of Parliament to preserve intact. If the present scheme of the Great Western Railway is defeated, as we hope it may be, a great step will be obtained towards the preservation of the scenery and the beauty of the Thames Valley.

e

Hampstead Heath Protection Society.

THE Society formed about a year ago under this title has issued its first Report. The object of the Society is to assist in the preservation of the Heath in its wild and natural state, and to protest against and oppose "improvements" which are calculated to alter this character; an aim in which we entirely sympathise, though we are inclined to think that in one or two instances the Society have rather injured their own cause by being a little unreasonable in their views or in their manner of stating them. A society to watch over the preservation of Hampstead Heath is an excellent institution, but it will best serve its own ends by interfering as little as possible, and only when there is an evident and palpable mistake to be resisted; otherwise it will create a feeling of opposition. The point which most interests us in the Report is the suggestion that some part of the Golders Hill Estate should be acquired for the public. To those who knew these beautiful grounds when they were in the possession of the late great surgeon who was their last owner, it must seem melancholy to think of such a paradise being destroyed by being turned into a building estate, which seems to be regarded as its probable destination. The house is a good one, however, as added to and modernised by the late owner; and possibly the estate may still be purchased by a private proprietor who will preserve it *in statu quo*.

Greenwich Observatory.

IT is expected that the new buildings for Greenwich Observatory will be completed for occupation in the course of next summer. Whilst their erection has been necessary in order that the Astronomer-Royal and his staff may keep abreast with the constant advance of scientific knowledge and research, they will somewhat interfere with the former solitary dignity of the old familiar building. Of that Observatory the first stone was laid on August 10, 1675, by Flamsteed, who lived there until his death in 1719, when he was succeeded by Halley. The eminence chosen by Charles II. for the Observatory was the site of the castle, or tower, built at Greenwich by Humphrey, Duke of Gloucester, who had a grant of the royal demesne from Henry VI. The tower, or "mirefleur," is depicted in Wyngaerde's long view of London, of *circa* 1552.* While the Observatory was being built, Flamsteed, who had previously used the circular turret of the White Tower, London, for his observations, was lodged in the Queen's House, or Palace, at Greenwich. As regards the instruments and their housing, the improvements effected by Sir George Airy (1835-81, when he retired) and his present successor have been so extensive that we believe no instrument is in ordinary use which was there during Pond's time (1811-35). Within the past seven or eight years have been built the porter's lodge, transit room in the courtyard, and octagon tower on the south side of the grounds. The south-east tower dome is replaced with a new one, having iron ribs, and weighing twenty tons. In order to receive the new "Equatorial"—which is 28 ft. long, and has an object-glass 28 in. diameter, constructed by Sir Howard Grubb, of Dublin—the dome was built by Messrs. T. Cooke & Sons, of York, in the unusual form of a bulbous cupola; it contains the telescope in every position save that of a very low altitude. The old 12¾ in. "Equatorial" was remounted in the octagonal tower; the new buildings will, we gather, serve for the physical observatory work and for the staff engaged upon "charting" the heavens by photography.

* A rare print by Hollar, 1637, is headed "Grænwich,' and lettered :—

"Behould, by Prospect, with what Art,
A House of Banquet, neare and part,
Fayre Greenwich Castle pleasantly
Of Thames and London, how they ly."

Guildford Castle.

WE hear that the Surrey Archæological Society have chosen Guildford for their headquarters, and will establish their museum—as a county museum—in the Castle, which is to be adapted for its reception. Guildford Castle, standing upon a partly artificial mound, originally commanded a ford across the Wey. Some follow King* in ascribing to it a Saxon origin. The Castle is not cited in Domesday Survey, and it seems that it was erected *circa* 1150. The walls of the keep, 10 ft. thick, have foundations, for 8 or 9 ft., of chalk and flint, the superstructure, rising to about 70 ft., being mostly of chalk-flint and sandstone, with thin bricks disposed in herring-bone fashion and ragstone facing with square angle-quoins. The hall, about 26 ft. square, had three Norman windows, since repaired with brickwork, the other apartments on the first and second floors had similar windows, one a-piece. On the west side, in the middle floor, about 15 ft. from the ground, was the original entrance (gained by an external staircase) beneath an arch pointed without and circular within—its mouldings being Late Norman. The round staircase was in the north-west angle. As at Rochester, and in the White Tower of London, there are galleries in the upper walls; in the south-west angle of the second floor is a ⊥-shaped vaulted chamber made in the walls, known as the Oratory, having a Norman arcade along all its south side†. The keep measures 45 ft. 6 in. by 47 ft. Matthew Paris relates that Louis the Dauphin captured the Castle, on June 9, 1216, when invited to England by the barons. In 27 Edward I. the Castle, together with the town and park, valued at 13*l.* 6s. 8d. per annum, was assigned, with Banstead and Kingston, in dower to Queen Margaret, but eight years later it was taken for a gaol, and so served to the close of Henry VII.'s reign. By letters patent dated April 27, 1612, James I. granted to Francis Carter, mayor, the site and appurtenances covering 5 a. 3 r. 10 p. John, grandson of Francis, Carter, rebuilt the outer gate, on the west side, leading into Quarry-street. Having then passed to the Tempest and Matchwick families, the property was sold, 1810, to the Duke of Norfolk, whose successor Bernard, twelfth Duke, sold it to Lord Grantley. Twelve or thirteen years ago the Corporation purchased the buildings, and they have since converted the grounds and foss into a public garden.

* See his "Munimenta Antiqua," Vol. III., with views and drawings of details; and his "Sequel" thereto.

† For a plan of this floor, and drawing of the Oratory, see Brayley and Britton's "Surrey." 1841.

St. Bartholomew's, Moor-lane.

THE Ecclesiastical Commissioners have framed a scheme for uniting the benefice of this church with that of St. Giles's, Cripplegate, and for selling the site and materials of St. Bartholomew's. The church was built by Professor C. R. Cockerell, R.A., in place of St. Bartholomew's-by-the-Exchange, pulled down in 1841 for a widening of the roadway opposite Tite's Royal Exchange. Most of the materials were sold on January 4, 1841, for 484*l.*, but the organ (by Bridge), pulpit, and woodwork were reserved for the new church, in which Cockerell reproduced the old tower with its curious finials in the shape of arches or windows. The original church, rebuilt in 1438 by Nicholas Yeo, sheriff, and Thomas Pike, alderman, stood where is now the Sun Fire Office (also by Cockerell, see our illustration of July 11, 1896), for which its south wall, and the chapel built by Sir William Capel, Lord Mayor 1503-4, were retained. Damaged * by the Great Fire, it was repaired by Wren, who reinstated the walls and tower, adding to the latter the singular feature already noticed. Sir William Capel was buried in the chapel he had erected, and beneath the altar was buried, 1568, Miles Coverdale, Bishop of Exeter, whose remains were removed, on October 4, 1840, to St. Magnus, London Bridge, whereof he was rector in 1563-6. St. Bartholomew's district was taken out of St. Giles's in 1851, when its population (now about 250) exceeded 4,000; the decrease is owing to the large amount of land taken for railways, and the extensive building of warehouses. The St. Giles's population has similarly decreased from 13,500 in 1861 to 1,137 in 1896.

* Not destroyed, as is commonly stated: see Mr. E. Freshfield's edition, 1895, of the parish account books.

The Chasseriau Frescos.

THE removal of the frescos by Chasseriau from the walls of the Cour des Comptes building at Paris has been successfully effected after only about twenty-four days' work, one painting only having had to be sacrificed. The various panels, which occupied a total area of about sixty square mètres, have been sawn off and transported to a special atelier, where the delicate operation is to be performed of removing the actual painted surface from the plaster and transferring it to a canvas backing.

THE ITALIAN RENAISSANCE.†

BY PROFESSOR AITCHISON, R.A.

ALL phases of architecture that the world has known are interesting and useful to architects, and are also worthy of the attention of all; for each phase portrays the tastes and tendencies of the time, and tells us the knowledge and imagination of the architect and the skill of the various workmen; but I think I may say, without fear of contradiction, that the Italian Renaissance was the most marvellous phase, and in some respects the least comprehensible. It has already lasted nearly 500 years, and in spite of the modern conception of architecture it may be said to still hold the first place, except for ecclesiastical structures, in that languid tolerance of architecture that still survives. We are a long way off the days of that witty Ambassador, Sir Henry Wotton, but a still greater gulf separates us from the time when a distinguished diplomatist could say, without fear of ridicule, that "Architecture can want no commendation, where there are noble men or noble minds."

The upheaval of the human mind, at the Renaissance, at first mainly stimulated literature and the ritual fine arts, but it afterwards turned men's minds towards the investigation of the laws of nature. The application of these laws to the material needs of man has gradually

† Being the third Royal Academy lecture on Architecture this Session. Delivered on Monday afternoon, February 7.

weaned society from the rough instruction given them, and the spiritual improvement engendered by the study of the visual fine arts, and turned the desires of society to that which has endowed them with wealth and power, and accustomed them to ugliness; consequently the fine arts languish.

It is surprising that we have no account of any method of training architects in Italy before the Renaissance, for, as far as I know, any clever man who had learned to paint or to model was considered to make as good an architect as any other. Frederic II. is said to have made Niccola Pisano (1206-1272) his architect when he was fifteen, and Niccola is believed to have designed the Castle Capuano and the Castel del Ovo at Naples; Giotto (1276-1337) did something to the Cathedral and built the Bell Tower at Florence, though he was brought up as a painter. Filippo Brunellesco (1377-1444) was brought up as a goldsmith and became a sculptor, but being a man of extraordinary genius, and from studying architecture from Roman remains, he became to a certain extent an able architect, and, as every one knows, he put the drum and dome on the Cathedral at Florence. What I meant by Renaissance architecture being marvellous was that none of the early architects were brought up to architecture or knew anything about it; they were literary men, goldsmiths, painters, and sculptors, and had no knowledge of what architecture meant as a constructive art. The Italians of the Renaissance, mostly coming from Florence and the small republics of the Val d'Arno were men of acute minds, of extreme energy, of splendid make and vigorous constitution, of untiring industry, and overflowing with enthusiasm; most of them had learnt to be handy and delicate with their fingers while learning the goldsmith's art, almost all could draw and model, and most of the early ones were sculptors of repute, and the rest were painters of note. All of them, I believe, were zealous students of Roman antiquities, so I think it was only to be expected that revived Roman architecture should take more exquisite forms than it had under the Romans. The codex of Vitruvius was rediscovered in 1414, and was immediately copied and circulated, and is supposed to have been printed between 1480 and 1492. Vitruvius's book was looked upon by the Renaissance architects as a book of recipes for reproducing Roman architecture, and we read in Panormita (Beccadelli) that Alfonso of Aragon determined to use no architect, but only the book of Vitruvius, for rebuilding Il Castel Nuovo, at Naples, between 1442 and 1458. Michalangelo is said to have had the same views when he built the staircase to the Laurentian Library at Florence.

The Renaissance architects, however, got the ancient idea of symmetry from Vitruvius, *i.e.*, the making each part of the building some ratio of the whole. They were, antecedently, votaries of the beautiful, and desired beauty, dignity, or exquisiteness in their buildings.

I now give you the Florentine Renaissance. Filippo, the son of Ser Brunellesco de Lippo Lapi, a notary, was born at Florence in 1377, and died 1446. He was apprenticed to a goldsmith, and became an expert jeweller, and besides making inventions in mechanics became an excellent sculptor, having surpassed Donatello, but seeing himself beaten in this art by the divine Ghiberti, he turned his attention to architecture; for he saw that as Florence was getting rich the cathedral would eventually be domed; so he persuaded his friend Donatello to go with him to Rome and study the antique, and when he had exhausted his money lived there by his craft of jeweller, and was enabled to pursue his studies of the antique. What we know of him we mostly get from Vasari, but whether he was really the precursor of those crowds of students who went to Rome to study Roman antiquities, and whose sketches are to be found in every great library, future antiquarians will have to determine. He, like Anthemius of Tralles, who built the great Byzantine cathedral of St. Sophia, was full of all sorts of ingenious mechanical devices. It is curious that although his building of the dome of the cathedral at Florence without centering created so great a sensation, that no contemporary has recorded the particular devices he used, nor has any one since; though Nelli gives a sketch of the scaffolding: and though Vasari records that before he was entrusted with the dome he vaulted several smaller spaces without centering, does he give us the least hint of how it was done. In this lecture, however, I am rather tracing the progressive steps in the revival of Roman architecture than seeking to elucidate Brunellesco's feats in construction.

The Pitti Palace is one of his great works, 665 ft. long, including the side porticos, with an extreme depth of 183 ft., and 124 ft. high to the top of the crowning balustrade. He is believed to have only carried up this palace to the top of the first-floor windows. Nothing shows better that truth in architecture, "that nothing comes from nothing," for its general appearance suggests the old Tuscan mediæval palaces, more resembling castles or prisons than places for admiration and enjoyment; very necessary when public riots and private feuds were so rife, and when every palace was so liable to be attacked that they were mostly built by friends in pairs on opposite sides of the street, so that protected drawbridges could be lowered or drawn across the street from which missiles could be showered on the attacking forces below: where the ground-floor windows were small, high up, and closely grated to prevent a horseman from thrusting his enemy through with his lance, or from shooting one of the occupants with his cross-bow bolt.

The whole front of the Pitti Palace is deeply rusticated, and the openings are arched with Tuscan arches—that is, with half-round arches, whose arched stones increased in length from the springing upwards, making a pointed arch at the top. Each floor has a balustrade whose balusters are small, fluted, Ionic columns. On the ground floor most of the arches are filled in and formed into windows with dressings and triangular pedimental heads supported by trusses with an architrave set behind the deep sills, which are supported by cantilevers resting on a deep base, with lions' heads between them. The sills are about 11 ft. above the footway. Probably the upper windows were intended to be similar, but are now partly built up. This palace and some of San Michelis work probably formed the models for Newgate. Brunellesco was constantly employed, being sculptor, architect, engineer, and mechanician. We have amongst his other works the Chapel of the Pazzi, in the cloister of Sta. Croce, at Florence. The front of this consists of a hexastyle Corinthian portico with unfluted shafts. The columns are about 9½ diameters high, and 3¼ diameters apart in the clear, except in the centre, which is about 7¼ diameters in the clear. and is spanned by a semicircular arch. Above the entablature are coupled Corinthian pilasters, the space between the pilasters being filled with a large marble panel subdivided into four. These pilasters carry an entablature about one-eighth of the whole height of the front, but in the brilliant sunlight the pilasters and panelling are scarcely noticed. The roof is carried by posts to clear the little dome in the porch. The chapel, exclusive of the portico, is externally square; the nave, if I may so call it, is oblong, a sacristy being formed in each angle of the square so as to leave a deep recess for the altar, and to abut the vaults of the nave; a flat dome on pendentives as wide as the nave is in the middle of the vault, and a smaller dome over the altar. The internal architectural adornment consists of fluted Corinthian pilasters supporting an entablature whose frieze is enriched with pateræ. At the ends there are two whole pilasters which divide the space into four parts, two being given to the central opening, which is spanned by an arch over the entablature, and the end spaces have square recesses arched over with round-headed arches with archivolts, and circles above also architraved. This front of the Pazzi Chapel appears to be original, and the breadth and simplicity of the front in bright sunshine makes it a notable example.

You can easily understand the popularity of the new fashion, introduced as it was by the great constructive architect of the day, whose scheme for doming the cathedral had surpassed those of all the native and foreign architects, and who had carried out the work successfully, nothing remaining to be done after his death but the lantern. As the proverb says, "The human mind is greedy of novelty," and this novel architecture not only introduced a simpler, larger, and more graceful style than Gothic, but reminded every scholar of the former greatness of the Roman Empire.

The second founder of the Florentine Renaissance was Leon Batista Alberti, of the noble family of that name at Florence. He was born at Venice in 1404 and was carefully taught and trained. He had all the characteristics of the foremost men of the fifteenth century, brilliant capacities, and invention and untiring diligence; as an instance of the last he is said never to have wasted an hour in his life. His vigour and dexterity were so extraordinary that it is said that he could, standing, jump over a man upright, pierce the strongest armour with his arrows, and fling a coin to touch the highest point of a church vault, while the wildest horses trembled under him. His insight into every branch of knowledge seemed intuitive. At twenty he wrote the "Comedy of Philodoxius," which the Aldi Manutii, the great scholars, published in 1588 as an antique Latin play. He wrote poetry, and was one of the early writers of pure Italian prose. He composed music, painted, and modelled, was a mathematician, engineer, mechanician, and natural philosopher, and is said to have anticipated modern discoveries in optics. He studied law, humanism, and theology, and became a canon of the Cathedral of Florence, and wrote books on all sorts of subjects, and was so skilled in physiognomy and divining that he almost earned the reputation of being a wizard.

How he learnt architecture we do not know; but he became a famous architect. He is mostly grouped with his contemporary, Lionardo da Vinci, on account of their both possessing such brilliant abilities in all directions. Few modern men are so brilliantly equipped by nature, if we except our lamented President, the late Lord Leighton.

Every architectural student knows of Alberti's books on architecture, painting, and sculpture. His fame as an architect now mostly rests on the Rucellai Palace at Florence, the Church of St. Andrew at Mantua, and his conversion of St. Francisco, at Rimini, into a temple to Isotta, for Pandolfo Malatesta.

He treated the front of the Rucellai Palace after the fashion of the Colosseum, only using pilasters instead of columns, and putting pedestals under the ground floor pilasters, the mouldings of which are carried through as a podium. The lowest order is Doric, with the echinus carved into eggs and tongues and the necking fluted. The capitals of the pilasters on the first floor are what we should now call Renaissance, but doubtless copied from a Roman example; on the second or top floor the capitals are of that sort of rough Corinthian whose leaves are not raffled. Each of the lower orders has its entablature, but the top entablature is formed into a cantilever cornice about one-seventeenth of the whole height of the Palace. The front does not appear to have been finished, as there are some of the arch stones of other windows on the two upper floors; possibly one more bay only was intended to make the front symmetrical. It is now divided into seven equal bays, with the exception of where the two doorways occur. These are about one-ninth wider than the other spaces, and the cornices of the doors project over the pilasters. The windows of the two upper floors are round-headed, and the archivolts are parallel, and not pointed as in Brunellesco's work.

The ground floor has small square windows in each intercolumniation, the bottom of whose architrave is level with the cornice of the door-cases. The whole front between the pilasters is rusticated in irregular heights. The windows of the two upper floors are formed into doublets by a centre column with two half ones at the sides supporting a lintel; above this each doubtlet is arched with a semicircle, while in the central spandrel is a circular opening. Between the pedestals of the lower pilasters the filling in is treated in imitation of opus reticulatum. I have lingered over this phase because it made the second stage in the architectural Renaissance of Italy.

Another work of Alberti's is the domed church of St. Andrew at Mantua, although I believe he did not turn the dome; but the work which has mainly conduced to his fame as a practising architect is the conversion of the Church of St. Francis, at Rimini, into a temple to Isotta, commonly called the Temple of Malatesta.

This work is said to have been begun by Alberti in 1447 and finished in 1450, and that he cased the old church. There is a triumphal arch to Augustus at Rimini from which he is supposed to have got some of his ideas and details of the front.

The front of this Malatesta temple is unfinished above the line of the cornice. It consists of four fluted columns with nondescript Ionic capitals, the neck having a row of

leaves above the astragal. These columns support an entablature which is carried right across the church and projects over each column ; in the centre compartment is an arch, the upper part of whose archivolt almost touches the soffit of the architrave of the entablature, and in each of the two side compartments are narrower and lower arches all having circular panels surrounded by wreaths in the spandrels ; below the lunette of the central arch is a wide doorcase surmounted with a triangular pediment.

As it now exists, the sides of the front gable finish below the tiles, and the unfinished central part above the gable is carried up by wide piers, with a fluted pilaster in the middle of each, and on the right hand side looking at the pier there is an impost and a voussoir of an arch that points to an arched opening being intended.

The entablature is carried along the flank but has no columns beneath it. The flank is a plain wall pierced by an arcade of seven openings, the arches springing from rectangular piers with boldly moulded capitals, but without bases, standing on the continuation of the podium on which the columns of the front rest. The cap of this podium is moulded and carved, and below this, the podium goes sheer down to the ground. The only other ornament on the flank are six round panels, surrounded by a garland as in the front, the lower half of each panel being in the spandrel. In each recess of the arcade is a sarcophagus to the deceased humanists.

This half-mad tyrant and monster, Sigismund Pandolfo Malatesta, was strongly imbued with the passion for learning which distinguished the age, for he had the body of Gemistos Plethon (1355-1450) exhumed and brought from Mista in the Morea, and buried in his temple, in recognition of Plethon's services in teaching Greek to the Italians.

This flank is a true revival of Roman architecture—grand, simple, and severe.

The inside of the church is very striking, in spite of the old timbered roof. It is said that Alberti meant to dome it. Some of the enclosures to the chapels seem like fourteenth century work, and the chapels have Gothic vaulting. The pointed arches to the chapels in the nave are supported by piers or pilasters. One of each alternate pair are apparently made up of a pile of carved cassones with their bases and cappings four in height, with groups of figures on the flat parts ; the other pairs consist of little temples with pilasters and an entablature, mostly with a single figure between the pilasters. These little temples are piled three in height. Above these the top of a pilaster issues, fluted below the necking and having a composite capital ; some of these piers or pilasters in the Malatesta Chapel are supported on two elephants, the elephant being the crest of Malatesta. This chapel with the elephants is said to have been carved by Simone (said to be the brother of Donatello) who worked with Filarete on the bronze doors of St. Peter's. Bernardo Cuiffagni is also said to have sculptured the portrait of Sigismond Malatesta from life on his tomb in this chapel. Where the space between these piers or pilasters is narrow one fluted composite pilaster is inserted ; where the space is wide there are two similar pilasters which support the ends of the continuous impost of the nave arches, the remaining portion being supported by three cantilevers with festoons between them and with shields hanging on them, while the impost breaks round the pilasters and the cantilevers. Above these breaks are five narrow fluted composite pilasters on elongated pedestals, supporting a string above the archivolt of the nave arches ; in front of these pedestals stand figures of children with shields. The spandrels of the nave arches have circular panels formed by a garland, and contain shields ; the rest of the spandrel is filled with bold and vigorous foliage. On the flat part of the archivolts is engraved in Latin the legend, "Sigismund Pandolfo Malatesta erected this in the year of grace 1450." Some of the enclosures to the chapels are, as I said, composed of small baseless colonnettes, supporting trefoiled arches and a capping, all of the style of the fourteenth century, and the others have larger and higher colonnettes, whose capitals support figures of children, and some way below the capitals of the colonnettes are pierced Renaissance panels.

There is no pretence of architecture in this interior as a structural art, but architectural features are used in a very original way as a scenic decoration. The whole interior may be looked on as a museum of the sculpture and architectural forms of the revival.

It may be well here to say something of columns and pilasters, as Bramante, who makes the third step in the Renaissance, invented a new departure in the matter of pilasters. He used them on the same front, wide apart and narrow to make rhythmical vertical divisions. The Greeks, as you know, made the ends of walls into pilasters, that is they gave them a capital and base. This was an æsthetic invention, and in the golden age of Greek architecture the capital of the pilaster had no similitude to the capital of the column. The columns were the necessary supports of the lintel which, in the first instance, was confined to the front. When the temple was surrounded with a verandah, its side lintels wanted supports, for the roof spanned from one side lintel of the verandah to the other.

The most cultivated Romans felt the artistic excellence of Greek architecture and wanted to have as good architecture in Rome, particularly as they had practically subjugated Greece, under the pretence of giving it liberty ; but having small artistic gifts, they thought this result could be achieved by putting the admired Greek verandah into their buildings. The necessity of cheapness at certain times made them use pilasters on the wall instead of a verandah of columns, and they did not see why these pilasters, because they were square and flat, should not be treated like round columns. Walls and windows were a necessity, columns and entablatures were art, and important buildings could not be tolerated without art, so you had what you so often see in the streets of London, a temple of columns and entablature filled in between with walls and windows for dwelling in, or for other useful purposes, Columns, as a rule, were of no use to the Romans except occasionally to form shelters in the shape of porticos ; but when groined vaulting was used the Romans saw that columns might be usefully employed to carry the groin points. In large buildings like the baths, where the internal halls wanted light, large windows had to be used. The long entablatures, however, kept out the light when the space between the columns was all window, so they omitted them ; but feeling that art was necessary, though they cut away the entablature for light, they still kept a piece of entablature over each column to show what they would have done, had not necessity compelled them to abolish the entablature. It was not till the days of Diocletian that they got rid of this superfluous and rather dangerous stilt. It is superfluous to say that a column used in a building as an ornament, or for any other purpose but to support weight, is ridiculous.

It seems most unfortunate that at the time of the Renaissance, the Italians should have had no architects, and that such extraordinarily able men should not even have comprehended that architecture was a structural art—that such an artistic race should have cast themselves blindfold at the feet of the Romans whom they so greatly surpassed in artistic skill and invention ; but we must take things as we find them in this world, and be grateful for any good we can find.

From the middle of the twelfth century till the end of the sixteenth century the art of construction had made giant strides in the West ; in fact, if we except the strides made by the use of iron in this century, it had made the greatest advance ever known, and yet all this was wilfully thrown away by men of the rarest powers and the greatest versatility. You see these literary men, goldsmiths, sculptors, painters, and carvers and gilders, becoming first-rate civil and military engineers, and yet these very same men, regardless of what had been done, were trying to continue architecture in the path it was pursuing a thousand years before ; they not only signally failed, but have, through the glamour of their personality, prevented it making a single step forward from that day to this. It is for you students to enter again on the right path, and again make architecture a progressive art, and at the same time make it as beautiful as that of the Renaissance by due attention to elegance of proportion and form, to effective mouldings, and to beautiful and appropriate ornamentation.

THE WESTMINSTER IMPROVEMENT SCHEME.—It is reported that Mr. Norman Shaw has accepted the position of architect to the board for promoting the Westminster Improvement Scheme, and that Mr. Lutyens will be associated with him.

Illustrations.

THE lithograph illustrations in this issue consist entirely of buildings in Bradford, and are nearly all referred to in our leading article.

They consist of, on the first sheet, Bradford Town Hall and a view in Market-street ; second sheet, the Yorkshire Penny Bank, St. George's Hall, and the offices of the Bradford Banking Company ; third sheet, the Technical College, the Market, and the London and Midland Bank ; fourth sheet, the Prudential Assurance Company's Offices, the Post Office, the Mechanics' Institute, and the churches of St. John the Evangelist, All Saints, and St. Clement.

ARTS AND CRAFTS EXHIBITION, LIVERPOOL.

THE spring exhibition of architectural drawings and arts and crafts, opened on Saturday last at Liverpool, shows a distinct advance on those of previous years. A large room is devoted to architecture, about four times the size of that similarly appropriated at Burlington House, and an opportunity is thus afforded architects of exhibiting their work on a scale and in a manner which the smallness of the room at the Academy renders impossible. Although there is much that is interesting amongst the nearly two hundred drawings, &c., hung, it cannot be said that the architects have availed themselves of the chance offered as much as they might have done. Many excellent designs by Messrs. Norman Shaw, Brydon, Reg. Blomfield, Mountford, Gerald Horsley, Prior, Skipworth, Temple Moore, Gotch, Voysey, and others, are included, but these are mostly represented by the "framed perspective" which we are so accustomed to see on the Academy walls, and of which we are so tired. There are many photographs of buildings, however, accompanied by plans, which is a far more satisfactory way of representing one's work. Two of the most complete exhibits are by Mr. A. M. Paterson, of Glasgow, and Mr. F. W. Bedford, of Leeds, who send sets of working-drawings accompanied by photographs ; but the buildings so represented, although interesting in design, are unimportant. Mr. Mountford sends a "light and air" model of his Museum extension and new Technical School, Liverpool, which when completed should form a good termination to a fine range of buildings. In the large room devoted to applied art there is much that is good and little that is bad. The "trade" advertisements, which in former years proved the principal feature, although not quite conspicuous by their absence, are few and unimportant. One corner of the room is, it is true, given up to a portion of a dining room "in the Renaissance style," and this it is unnecessary to describe as everybody knows well the kind of thing. The most perfect little exhibit is by Mr. R. Ll. B. Rathbone, who sends two wall cases full of the most fascinating little brass and copper cabinet fittings and door furniture, delightful in colour, the result of natural oxidation, and simple and never forced in design. Mr. Rathbone also sends some copper candlesticks, designed and executed by himself, which prove what can be done by a competent workman and artist without overstepping the limitations imposed by the material used. Mr. Anning Bell, amongst other things, has two coloured plaster reliefs which are charming in design, although it is to be doubted if the colour applied has really been an improvement. One cannot help feeling that much of the effect is lost through many colours being introduced, and that simple white and gold with but a touch of colour here and there as high lights would be more effective. He also sends some large cartoons for stained glass, which are carefully finished uncoloured drawings ; but they are only means to an end, and it is a question whether carefully prepared cartoons such as these should be made at all. Much of the freshness and expression shown in these must, if copied by another hand, be lost in the work itself. Really satisfactory work in this branch will not be universally obtainable until all artists paint the glass, as some happily do, themselves. A better way probably of showing a design for a window is Mr. C. W. Whall's coloured sketch, which shows through a brown paper mount representing the mullions and lines of the tracery. Doubtless a better way still is a method,

practised we believe by Mr. Whall, of showing a sketch in bits of coloured glass, but there is a difficulty in placing it where it can be properly seen. Mr. Nelson Dawson sends a grate and fireirons, which, original in design and excellent as they are in many ways, are wonderfully unpractical in some respects. The size and weight of the fireirons, for instance, would render them almost useless, and the gilding applied to the grate itself, which adds so much to its appearance in an exhibition, would rapidly become black when in use. Mr. Longden's exhibit, although rather dull, is more practical, and his dogs with enamelled tops—designed by Mr. Lethaby, we believe, although no mention is made of this in the catalogue—are effective. There is a very numerous exhibit of various vases, panels, &c., by the Della Robbia Co., Birkenhead, but none can be said to be quite satisfactory. Some fail in colour, some in design, and the least ambitious are the best. There is a very fine set of plaster models, "The Children in the Garden of Joy," designed and modelled by Mr. Stirling Lee, and intended to be carved in wood for the staircase of a London house; but it would have added greatly to their interest if some explanatory plan or drawings had been sent with them giving their sequence and positions and showing their architectural setting. Mr. Krall sends a case full of ecclesiastical metal work, of which the crystal and silver examples are the most telling. But why does Mr. Krall omit all mention of other names than his own? Some very good painted and glazed tiles, designed by Mr. Lewis F. Day, are shown, and some excellent examples of silk damask, manufactured by the English Silk Weaving Company, and designed by various artists, are exhibited by Mr. Robert Christie. An embroidered quilt, designed by the late William Morris, and executed by Miss May Morris, is, unfortunately, stowed away in a corner, where it may not receive the attention it deserves. No exhibition of this kind would be complete without Mr. Voysey's wall papers and hangings, and many of these, especially the latter, are charming in colour and design. Miss Margaret Hussey's carved and gilded frames are worthy of mention, and so is Mr. Robert Hilton's copper panel with its enamelled centre. Altogether the show of applied art is excellent, and it would be difficult to see an equally good one in many provincial towns. Another large room is devoted to the work of the students of the School of Architecture and Applied Art and other schools in Liverpool. Much of the work of the school named is good, and shows that it has kept in view the objects for which it was founded—that of educating students in architecture and in the arts and crafts allied to architecture. Included in its exhibits are designs for houses, churches, &c., and other architectural drawings, many designs for friezes, wall papers, &c., several examples of modelling of panels, &c., a small but excellent collection of wrought-iron work, a few examples of copper work—a branch lately started—and some carved wood panels which are nothing remarkable, although workmanlike. There is a well-arranged collection of photographs in two of the small rooms, and another large room is devoted to representative examples of Indian work, lent by the South Kensington authorities. Last, but not least, is an excellent collection of lithographs by Mr. C. H. Shannon, of which "The House of Delia" is especially good.

THE SURVEYORS' INSTITUTION:

SURVEYORS AS ARBITRATORS.

AN ordinary fortnightly meeting of this Institution was held on the 7th inst. in the temporary premises of the Institution, Savoy-street, Victoria Embankment, Mr. R. Vigers (Vice-President) occupying the chair.

The minutes of the last meeting having been read and confirmed,

The Chairman called upon Mr. P. E. Pilditch to resume the discussion on Mr. A. A. Hudson's paper entitled "Surveyors as Arbitrators," adjourned from the last meeting on January 24, an abstract of which will be found in our issue of January 29.

Mr. Pilditch, in supporting the vote of thanks, said that there were a great many cases where a tribunal might be suitable, but in the large class of cases where the surveyor had to do with property, the present procedure could hardly be improved. There were two classes of disputes under the London Building Act, the first: cases under the party-wall sections, where the procedure was laid down, and where one surveyor was appointed on each side, and another to act as umpire. The other class, which Mr. Hudson had not referred to, were those sent by the Act of 1894 to the Tribunal of Appeal. Most would agree that the best tribunal to settle building cases was where a surveyor, who was also architect, or who had architectural knowledge, was employed. Mr. Hudson had said that where a surveyor was employed as umpire, the costs were frequently as high as if the case had been taken before the High Court. This was the case where a solicitor and one or two counsel were employed to fight out the case, but it was not necessary to fight out every case in this way. One argument against the employment of a surveyor alone was the difficulty of finding one who would decide upon strict legal rules questions of cost. They would probably all admit that the surveyor was much better able to understand technical evidence than a judge, who had not sufficient technical knowledge. The surveyor seemed to him to be able to give a decision on the merits of the whole case, whereas the High Court cases were sometimes necessarily decided, not on the weight of evidence, but on some small point which the judge had been able to understand. He therefore thought a surveyor was the best tribunal in building cases; but all cases could not be taken before a surveyor, as in many a legal point was the whole question, and he thought the surveyor was out of place in settling cases where it was a question of legal liability. Mr. Hudson had suggested that a tribunal should be formed to which certain cases might, as a matter of course, be referred. He had referred to the Admiralty Court, but he (the speaker) thought that this court must be expensive, as experts were there apparently trying the case twice over. Possibly Mr. Hudson would agree to an extension of the present system of setting apart a certain judge to try a particular class of case, as in commercial cases, with a reference to a surveyor to report on the facts only. In aid of this a list of surveyors competent to act in particular kinds of cases might be kept in the Court. He thought this might be done, but he did not think they would get the Government to set up a brand new tribunal.

Mr. T. M. Rickman said that the first thing necessary was that the building should be seen by the person who had to settle the dispute. He thought the court should sit at the building itself, and have before it the matter it had to discuss. In regard to the Institute of Architects, the recommendation of the Institute was that the arbitrator should be a Fellow of the Institute, and not merely a member. The position of an architect where he had had nothing to do with a building, but was called in to arbitrate, was very different from his position where he had been connected with the building by giving orders or otherwise. It must be admitted, he thought, that it was natural for an architect who had had work carried out to have a bias towards the owner; but an outside architect did not have that bias. As to the professional training of men who should be appointed arbitrators, a good deal depended upon a man's early business experience. Men with business experience like quantity surveyors, were naturally preferred by builders, but they must remember that a quantity surveyor not only prepared the quantities, but was also commonly called in to adjust the accounts at the end. He supposed that if an architect were appointed arbitrator between a building owner and a builder, one would be selected who would not be influenced by known feeling for one side or the other. Where an arbitrator was named in a contract, it was not fair for the client to be able to name his architect as final umpire. The arbitrator's name should be mentioned before the contract was made. If one looked at the question of what a technical court would have to do it would be found that such courts must be deputed, among other matters, to settle questions between builders and clients as to work done. The questions that arose as to party or joint walls were much more difficult of settlement in the country than in London, where there is a Building Act. It would probably be of advantage if the right of light in London and party-wall questions could be dealt with by a single mind. The arbitrator should be trained by aking first one side and then the other. If he worked up from a builder's clerk then he would first take the builder's side, and if he had had a strictly professional training then he would first act for the owner; but he must have practice alternately, and must learn to say the same thing to both sides.

Mr. H. Northcroft said that it was not a question between architects and surveyors which were the more competent to act as arbitrators. That was wholly a question of the strength of character and independence of the man himself. He ventured to point out that Mr. Hudson's paper suggested no interference with professional arbitration as such, but that it drew attention to the crying need of a technical tribunal for building cases. Not more than one-fourth of the disputed building cases came before the Courts, and those were, from the nature of the circumstances, most indifferently dealt with. The technical tribunal would have nothing to do with party-wall disputes: the rules in force under the London Building Act might well apply to the country. The tribunal must consist of at least two members, one legal and one technical, as it was hardly possible that one man could combine in himself the qualifications of both sides, or obtain the necessary training. He should like, if in order, to move a resolution to the following effect:—"That a Committee of the Council be appointed to consider the question of a technical tribunal, and to inquire into the nature of the causes which would be brought before it."

Mr. A. Vernon said that since the Romans there had not been such an honourable Court as our High Court, but he thought that they would all prefer to go before arbitrators, who understood the subject, in the event of a dispute.

Mr. W. H. Strudwick said that when no legal questions were involved the reference of disputed builders' accounts to a surveyor accustomed to act both in the interest of the builder and also of the building owner was the best mode of procedure. He thought the name of the President of the Surveyors' Institution should be substituted for that of the President of the Institute of Architects in the arbitration clause in conditions of contract.

Messrs. C. J. Mann, H. T. Steward, and Arnold Statham having spoken, and the vote of thanks having been put, and carried unanimously,

Mr. Hudson, in the course of his reply, said it had been stated that his was only a scheme, but he was dealing with cases that must go to law, and at present the judge had no power to refer any case to a special arbitrator. They needed some centre to, as it were, deal out these cases. He thought the Surveyors' Institution might well put into the form of contract that the arbitrator should be appointed by the President of that Institution.

The Chairman said that it was now often the case that the name of the President of the Institution was put into the form of contracts.

The meeting then terminated.

The annual dinner of the Institution, which was held on Wednesday last week, at the Holborn Restaurant, was attended by upwards of 200 members. Mr. Christopher Oakley, the President, occupied the chair. In the course of the evening, Mr. Wheeler, Q.C., proposed "The Surveyors' Institution," and referred to the steady progress which the Institution had made in recent years. From the numerical standpoint, the Institution now occupied the second place among professional societies, omitting, of course, from this comparison, those ancient corporations, the law societies, and the two branches of the medical profession. They had introduced a system of professional examination of a most practical character, carefully adapted to the requirements of the various branches of the profession, and had actually examined 3,228 candidates in the last sixteen years. Moreover, it had accumulated funds sufficient for the construction of a large building, now in course of erection, in Great George-street, designed by Mr. Waterhouse, R.A., and estimated to cost 30,000*l*.

MISSION CHURCH, HUNSLET, LEEDS.—A new mission church is being erected at the corner of Low-road and New Pepper-road, Hunslet. The building has two floors, the upper being intended for use as a mission church, to seat 250 persons, and the lower for Sunday school and other purposes. The dimensions in each case are about 27 ft. by 65 ft. The structure has an apsidal termination to the east. The architect was Mr. J. E. Leak.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of this Council was held on Tuesday in the County Hall, Spring-gardens, Dr. Collins, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend the Fulham Guardians 2,100*l.* for alterations and additions to the workhouse infirmary; the Wandsworth Guardians 4,200*l.* for drainage works at the St. John's Hill Infirmary; the Paddington Guardians 25,000*l.* for purchasing land upon which to construct more additions to the workhouse; and the London School Board 150,000*l.* for the purchase of sites, erection of new schools, &c.

The Works Department.—The same Committee reported as follows (Paragraph 11):—

"At a recent meeting of the Council our Chairman promised to furnish to the Council a return showing the financial position of all works in course of execution by the Works Department. The manager has prepared and presented to us a return showing the position of all works completed but not reported to the Council under Standing Order No. 189, and of works in progress. We have directed a copy of this return (No. 5), together with an explanatory report by the manager, to be sent to each member of the Council."

The report of the manager referred to in this paragraph is as follows:—

"In presenting to the Finance Committee the appended return of works completed and not measured, and of works in progress, some explanation appears to be necessary, and I therefore, in accordance with the request of the Committee, beg to offer the following remarks:—

Statement No. 1.—Works commenced during the late management, and completed in 1897, but not measured.—It is not yet known what the revised estimates for the two works on this statement will be, but when they are arrived at I shall be able to give full explanations of the causes of the excess which will doubtless appear in the cost of Pimlico river station. It may, however, be said generally that the same reasons for the excess apply in this case as reported by me in the case of Vauxhall (temporary) bridge. In the Battersea river station foundations it will probably be found that the final estimate, and the actual cost, will about balance one another.

Statement No. 2.—Works commenced during the late management, and still in progress.—Dealing first with the artisans' dwellings at Green-street and Gun-street, and at Boundary-street (blocks C, E, and F), I would point out to the Committee that the variations on these works, since their acceptance by the Department, have been so extensive, affecting work of the value of thousands of pounds, that it is quite impossible to offer an opinion as to what may prove to be the final result. One portion of the work not included in the original estimate for Boundary-street, but *included in the actual cost*, to be transferred to a separate account when the expenditure is complete, amounts to about 1,000*l.* Over two-thirds of this work was executed during the late management. The work in connexion with the Vauxhall temporary bridge approaches was subjected to serious delay due to the alterations to the centre span of the bridge, and the revised estimate of the value of the work under these circumstances will be a matter for the judgment of the Engineer; I am unable, therefore, to express an opinion as to the final result. More than half this work was done before I took control. The first portion of Lewisham sewer, equal to about two-thirds of the whole expenditure, had been executed before my appointment, and I have fortunately been able to arrive at the value of the work executed up to that date. From this it appears that the actual cost at that time exceeded the estimated value of the work done by about 14,800*l.*, and although I anticipate the revised estimate will be somewhat less than the original, from a comparison of the figures it is quite certain that at least there has been no excess over the estimate on the work done since the date referred to, and I am hopeful that in the end it will be found that the excess has been considerably reduced. In justice to the late manager it should be remarked that difficulties were encountered in the first portion of the work which did not occur in the second, but, on the other hand, I found it necessary to reorganise the staff and the entire method of conducting the work, and the result of the change of method was a reduction in the cost of execution of at least 33 per cent. From comparison with prices paid for earlier works of the same nature, I have arrived at the opinion that, had the work been offered to tender, the amount asked would have been upwards of 75,000*l.*, but I further consider that, had the methods been adopted at the commencement of the work which (after very careful and anxious study of the condition in which I found the work on my appointment) have since been adopted, the estimate would not have been exceeded. Heathwall pumping-station is a work on which I can offer no opinion as to what may be the final result, as it will, I think, be necessary to go into the whole detail of the measurements before any idea can be arrived at as to its estimated value. Nearly 80 per cent. of this work was completed when I took charge. Crossness outfall boiler seatings will result in a considerable saving over the estimate, the work being as nearly as possible completed. Almost 60 per cent. of this work had been executed before my appointment. Crossness outfall extension of pumping arrangements: when this work was taken over by me on my appointment, about 34 per cent. of the expenditure to date had been incurred, but the work was in considerable confusion, and it was found necessary, as at Lewisham sewer, to entirely reorganise the job, and I am happy to say that an excess over the estimate need not now be feared.

Statement No. 3.—Works commenced and completed during new management, but accounts not yet agreed.—On both the works under this head a very fair saving may be looked for. It will be noticed that these are the only works for which I give the approximate revised estimates, the reason being that in the first (Vauxhall temporary bridge alterations) the original estimate has been largely reduced in consequence of modifications in the design; and in the second (Albert and Chelsea embankments repairs to lamps), there has been so little departure from the original intentions that there has been no difficulty in arriving at the probable amount.

Statement No. 4.—Works commenced during new management and still in progress. It is expected that six of these ten works will be completed by the end of this month (February), and that they will, in each case, show a fair saving of cost below the estimate. On one of these, viz., Millbank estate roads and sewers, the saving will be very large owing to certain favourable incidents, which will be fully reported upon on completion of the job. Of the remaining four jobs, the "Central Works—Enlarging stores" will show a saving; Boundary-street, Clifton and Molesey buildings is in too early a stage to offer a definite opinion as to the final result, but I have every confidence that the estimate will not be exceeded. In the work of North Woolwich drainage the period of greatest risk has been successfully passed, and I expect the work will be carried out well within the estimate. Peckham Rye refreshment house is completed, but, not having been measured, or the final credits given, I cannot give the exact results; but there may be a small excess of cost over the estimate; if so, however, it will be the only instance in the thirty-two works entrusted to the Department, under the new management, in which this will be the case. It should be borne in mind that the expenditure shown in these returns, as incurred upon works not yet completed, as well as upon those which have been completed, both estimated and jobbing, includes the proper proportion of office, yard, and other general charges, as well as interest on capital outlay and working capital, and the repayment of the capital cost for land and buildings at Belvedere-road and Battersea. The amount of work given to the Department during the past twelve months has not been enough to keep these charges down to what I consider to be the normal percentage; especially was this the case in the early part of the year when the shops were absolutely without work save for the small job at Peckham Rye above referred to; but it is reasonable to suppose that a larger volume of work will tend to reduce the proportion of these charges, and further improve the results of the operations of this Department.

Statement No. 5.—This statement shows works completed, certified and presented to the executive Committees, with my reports on each case, but not yet laid before the Council. The result of each of the works being favourable, I do not think they require further comment from me.—W. ADAMS, Manager."

The returns referred to show that, of the works commenced during the late management and completed in 1897, but not yet measured, the original estimate was 3,375*l.*, and the actual cost, subject to audit, 4,018*l.* 1s. 9d. The works commenced during the late management, and still in progress, were originally estimated at 166,948*l.* 16s. 11d., while the total expenditure and liabilities incurred to December 31 last amounted to 162,501*l.* 17s. 5d. Works commenced and completed during the new management were estimated to cost 4,923*l.*, and the actual cost, subject to audit, was reported to be 3,434*l.* 7s. 8d. The original estimate of works commenced during the new management, and still in progress, was 97,414*l.*, and the actual cost and liabilities incurred to December 31 last was 37,389*l.* 9s. 6d. The concluding table in the manager's report deals with works completed, certified, and ready for inclusion in the next half-yearly statement. The original estimate of these works was 16,066*l.* 16s. 8d., the revised estimate 13,788*l.* 17s. 10d., and the actual cost 10,438*l.* 19s. 9d., showing a cost below estimate of 3,349*l.* 18s. 1d.

Lord Onslow moved that Paragraph 11 be not received. He said it could be shown that the net result of these works undertaken by the Works Department was a very large increase in cost over what would have been done by contractors.

Mr. Corbett seconded the amendment.

Mr. Ward said that nobody could judge by the figures what the final and total cost would be, because the jobs were not completed, and extra work was not included. If they expected the manager to carry out the work in a proper commercial way, they should not hamper him by calling for these returns.

Mr. Westacott said that they could not sit still and receive statements without commenting upon them, especially as they felt that the Works Department had no right to exist unless it could do the work as cheaply and efficiently as a contractor. From all that could be seen, it would appear that the accounts of the works completed during the half-year to March next would show a still greater loss than those of the past year.

Mr. Bruce observed that he was not at all surprised that Lord Onslow did not like the returns, because they showed that with one exception all the works carried out under the new management had had satisfactory results.

Mr. E. White said the manager's statement supported the contention of the Moderate party as to the desirability of not being interfered with by the Works Committee. He maintained that it was quite clear from these returns that there had been a total loss of 35,000*l.* made by the Department during the year.

After some further discussion a division was taken upon the motion, which was defeated by 61 votes to 53.

Compulsory Registration of Title.—Mr. Jerome moved:—"That in the opinion of the London County Council, compulsory registration of title under the provisions of the Land Transfer Act, 1897, would not be desirable in their county." The question was not a party one, and the Act was merely an experiment. A voluntary land registry now existed, and was but little used. Sixty-seven important public bodies in London had voted against the application of the Act, and only fourteen in its favour.

Mr. Banning seconded the motion, which, after a long debate, was rejected by 73 to 35.

Mr. Beachcroft thereupon moved:—"That the Privy Council be informed that the London County Council relies on the Order applying the Land Transfer Act, 1897, to London being so framed that it shall be made to take effect progressively, and shall not in the first instance be made to apply to more than one-fourth of the county."

Sir A. Arnold suggested that it would be more courteous to the Privy Council to substitute for the terms of the resolution a request to the same effect, but in other words, viz., that the order should take effect "according to the letter from the clerk of the Privy Council of January 18, 1898."

This was agreed to, and the resolution, as amended, was adopted.

Electric Lighting of the Embankment.—The Highways Committee recommended a scheme of electric lighting on the Victoria Embankment and Westminster Bridge, at a capital expenditure of 25,300*l.*, and a yearly cost of 3,500*l.* This was agreed to.

Instruction in the Arts and Crafts.—The adjourned report of the Technical Education Board contained the following statement:—

"The Board has recently made further steps towards the development of art teaching in special relation to the requirements of the various industries for which artistic handiwork is essential. Having begun by encouraging the development of technical sides in the principal art schools already existing, and by placing eleven of the schools upon the footing of 'technical art schools,' the Board proceeded to endeavour to meet the deficiencies that still existed by establishing institutions where the whole of the art teaching should be directed to industrial processes. To a certain extent the schools of art that have grown up in connexion with the polytechnics have tended in the desired direction. The schools of art attached to Battersea Polytechnic and the South-West London Polytechnic and the artistic crafts department of the Northampton Institute, have all introduced a thoroughly practical element into their art teaching. Again, the establishment of the Lithographic School at Bolt-court supplied an example of what might be done towards providing specialised art training to members of a particular craft. But it was felt to be of great importance to create a school which should give complete courses of training in various allied art; and with this object the Central School of Arts and Crafts was founded in Regent-

street in 1896 to provide specialised instruction for those engaged in the various artistic crafts which are related to the building trades. This school formed the first instance of the direct supply of technical instruction by the Board; up to the time of the founding of this school the Board had confined itself to aiding the supply of instruction in institutions not directly managed by the Board. The success of the school has been so marked that the Board has recently had to consider the question of providing enlarged accommodation for the classes, as the resources of the building are sometimes heavily taxed by the large number of students that are in attendance. As many as 146 students have attended on one evening, all of these being persons actually engaged in artistic industries. The classes for silversmiths now form an important feature in the school, there being classes for designers, smiths, chasers, engravers, metal carvers, and enamellers. 108 students have joined the silversmiths' classes during the present session. Additional classes have recently been started in bookbinding and in embroidery, while a marked increase has been shown in the class on architectural drawing and design. A further step towards the development of art teaching has been quite recently taken by the Board through the opening of a new School of Arts and Crafts at Camberwell, the Camberwell School of Arts and Crafts . . . . An advisory committee, on which the Vestry of Camberwell has appointed five representatives, have approved the appointment of Mr. C. L. Burns, late of the South-West London Polytechnic, as head master, and of the following members of the teaching staff:—For Modelling—Albert Tofts, sculptor; for Architecture and Cabinet Design—A. Wickham Jarvis, A.R.I.B.A.; for Drawing and Design—Louis Cockerell, formerly of the Birmingham Municipal School of Art; for Design—Thomas Kerr, late of the Putney School of Art; for Painting and Decorating—Alfred E. Bramley, National Scholar; for Wood Carving, day class—Miss Campbell, of the South-West London Polytechnic; for Wood Carving, evening class—W. Aumonier, jun.; for Embroidery—Miss Hewitt, formerly of the Royal School of Art Needlework and the South-West London Polytechnic; for Plasterers' work—A. Young; for Masons' work—W. H. Johnson, of the Westminster Technical Institute. Special facilities are being offered at the school for artisans, learners, and improvers to join the classes, and courses have been arranged specially suited for masons, stonecarvers and plasterers, and also for embroiderers and workers in black and white. The same low rate of fees for artisans has been adopted as at the Central School of Arts and Crafts, although at Camberwell day classes are also held at which higher fees are charged."

The following evening classes are being conducted during the present session in connexion with the building trades. Most of the classes are aided by the Technical Education Board, the principal exceptions being those conducted in the Finsbury College of the City aud Guilds of London Institute, the Trades' Training School of the Carpenters' Company, the Goldsmiths' Institute, and the East London Technical College:—Building construction, architectural drawing, and workshop drawing, at thirty-eight institutions; builders' quantities and quantity surveying, at eleven institutions; brickwork and brick-cutting, at twelve institutions; carpentry and joinery, at twenty-one institutions; masonry and stone-carving, at ten institutions; painters' and decorators' work, including classes on oils and varnishes, at fourteen institutions; plasterers' work, at nine institutions; plumbing, at seventeen institutions; sanitary science, at three institutions; staircasing and handrailing, at ten institutions; architecture and architectural design, at seven institutions; electrical fitting, at six institutions.

Widening of Drury-lane.—The Improvements Committee recommended, and it was agreed: That the estimate of 3,900*l.* submitted by the Finance Committee be approved, and that, subject to the Strand District Board agreeing to contribute one-fourth of the net cost, the Improvements Committee be authorised to arrange for the widening of the road to 40 ft. at Nos. 95, 96 and 97, Drury-lane, and that, in the event of the owners being unwilling to sell the land at a reasonable sum, the Strand District Board be asked to acquire the property compulsorily under the powers conferred by the Act 57 George III., chapter 29 (Michael Angelo Taylor's Act), on behalf of the Council.

Places for Cremation.—The Parliamentary Committee reported:—"We have considered the Council's resolution on June 1st, 1897, directing us to take measures with the view of obtaining powers for local authorities under the Metropolitan Burials Acts to provide places for cremation. Before giving instructions for the preparation of a Bill to give effect to the resolution, we consulted the Burial Board authorities throughout the metropolis, and ascertained that they were in favour of the proposal. The matter is one that has to be dealt with by public legislation, and we have accordingly had a public Bill prepared. We have directed a copy of the Bill to be sent to each member of the Council, and we recommend—'That the Metropolitan Burial Boards (Cremation) Bill, as circulated, be approved, and that the Parliamentary Committee be authorised to take the necessary steps for its introduction.'" The recommendation was adopted.

Plans and Notices of Drainage Works.—The same Committee reported as follows, the recommendation being agreed to:—

"We have considered the following resolution passed by the Council on November 2, 1897: 'That the Parliamentary Committee be instructed to insert clauses in one of the Council's Bills of next session—(*a*) Authorising the Council to make by-laws requiring persons about to construct, reconstruct or alter drains in connexion with buildings, to deposit with the sanitary authority such plans and particulars as may be necessary for the purpose of ascertaining whether such construction, reconstruction or alteration is in accordance with statutory provisions and with any by-laws made under Section 202 of the Metropolis Management Act, 1855; the proposed by-laws to be subject, for the sake of uniformity, to the provisions of the same Act. (*b*) Transferring to the Local Government Board the powers of the Secretary of State under Sections 202 and 138 of the Metropolis Management Act, 1855, and Section 83 of the Metropolis Management Amendment Act, 1862; and providing that by-laws under those sections shall require confirmation by the Local Government Board and not by a Secretary of State.' We have considered it advisable to deal with the matter by means of public legislation, and we have accordingly had a public Bill prepared. In settling the Bill we have, however, thought it advisable to omit reference to the matter contained in paragraph (*b*) of the above resolution, as it appears to us that such a proposal should emanate from one of the Government departments concerned, and not from the Council. Should the departments consider it desirable to deal with the matter in the Bill, the necessary addition may be made when the Bill is in Committee. We have directed a copy of the Bill to be sent to each member of the Council, and we recommend: That the Bill to authorise the Council to make by-laws dealing with plans and notices of drainage works, as circulated, be approved, and that the Parlimentary Committeee be authorised to take the necessary steps for its introduction."

Result of legal proceedings.—The Building Act Committee recommended, and it was agreed: "That the Superintending Architect and manager of the works department be authorised by the Council to enter upon the premises, No. 50, Eglinton-road, Bow, and, in accordance with the order made by the magistrate on January 6, 1898, to do whatever may be necessary to make the structure, which has been erected at the rear, in advance of the general line of buildings in Vernon-road, conform with the provisions of the London Building Act, 1894.

District Surveyor, Fulham.—The same committee recommended, and it was agreed, that Mr. Moseley, who has been District Surveyor for Fulham for nearly fifty-four years, should be called upon to resign that position.

Raleana-road, Blackwall Tunnel.—The Bridges Committee recommended, and it was agreed: "That the estimate of 2,250*l.* submitted by the Finance Committee for forming the remaining portion of Raleana-road, the construction of a stores building and approach road, and a boundary wall be approved; that the work be carried out at an estimated cost of 2,250*l.* by the Council without the intervention of a contractor, and that the drawings, specification, and bills of quantities be referred to the manager of works for that purpose.

The Council adjourned soon after seven o'clock.

THE CLERKS OF WORKS' ASSOCIATION:

ANNUAL DINNER.

THE fifteenth annual dinner of the Clerks of Works' Association took place in the King's Hall, Holborn Restaurant, on Monday evening. Mr. W. H. Seth-Smith occupied the chair, supported by Messrs. G. Fellowes-Prynne, H. T. Hare, A. S. Flower, E. Monro, Lewis Solomon, A. R. G. Fenning, H. W. White, G. Elkington, Alan Paull, H. Chatfeild Clarke, J. Sheppard, E. Brooks, F. E. Brooks, Stanley Clarke, T. Stirling, F. Stirling, S. Wright, Stanton W. Preston, and others.

The loyal and patriotic toasts having been proposed by the Chairman (Mr. E. Monro responding for "The Navy, Army, and Reserve Forces"),

Mr. J. Brady, the Editor of the *Clerks of Works Journal*, proposed the "Architects and Surveyors," coupled with the names of Mr. G. Fellowes-Prynne and Mr. Alan Paull.

Mr. Fellowes-Prynne, in response, said he felt much pleasure in meeting on that occasion his fellow workmen and those interested in the great science and art of building. Architects felt that in clerks of works they had real helpers in their works. Clerks of works were the eyes of the architect, and they held the reputation of the architect in their hands, for an architect who had much work could not possibly be expected to look after every single detail of that work. In regard to the relationship of the clerk of the works to the architect, he could not help thinking that the highest ideal was unswerving loyalty to the architect—though, of course, the duty of the architect to the clerk of works was equally unswerving—and next to that came the utmost integrity and honesty of purpose—and those who had had most experience would feel that these were essentials for clerks of works. There were also tact and judgment, and last, but not least, a firm but just hand in dealing with builders, architects and clients. A clerk of works could also inspire a certain spirit amongst workmen—the spirit of emulation, which could be inspired by his simple example, by his thorough knowledge of the work, and by his readiness to help a workman who might be in difficulties. The clerk of the works had to deal with exceptional difficulties, many of which were equal to the troubles of the architect—difficulties which arose in dealing with the builder and the client and between the client and the architect, and any clerk of works of experience would know how many petty difficulties there were to face, which tried a man's character greatly. One of the great advantages of an Association like theirs was that it brought together men of the same thought, and it resulted in mutual intercourse which could not but be helpful, especially to the younger members of their Association. The *Journal* of the Association was also a very useful little publication, which must be of great value to the members. He had often felt that clerks of works must be tried a great deal in having to work on a small, almost insignificant, job after working upon a large and important work; but they must remember that it was not the work that made the man, but the man who made the work, and that fact ought to be remembered by them, especially by men who had as their aim good and thorough work. They must feel that, however much, or however little, their names might come forward for the work they did, their reward was the consciousness of having done their best. The highest aim a man could have was in doing some work for the good of the work itself.

Mr. Alan Paull briefly replied for the Surveyors. The clerk of the works, he said, was also the eyes of the surveyor, for the surveyor had to depend upon him very much.

Mr. W. S. Woolacott, past President, then proposed the "Worshipful Company of Carpenters." The Clerks of Works' Association, he said, thanks to the Carpenters' Company, was able to hold its meetings in Carpenters' Hall; its President, for the time being, acted as one of the examiners for the Company; and the members of the Association had the use of the excellent library at Carpenters' Hall.

Mr. Stanton W. Preston, Clerk of the Carpenters' Company, in the course of his response, said that he had represented the Company for twenty-one years, and he had seen it rise from a sort of obscurity to the high position it now took amongst the City Guilds; and that position was due to the manner in which they had used their means. The Company was called the Carpenters' Company, but it might more appropriately be called the Builders' Company. In regard to their work at Stratford they had an organised science school of 160 boys, and evening classes which were attended by about 280 boys. At Titchfield-street they had classes for every trade connected with the building trade, and there were 250 evening students at work there.

The Chairman then proposed the toast of the evening, "The Clerks of Works' Association." Having referred to the work of clerks of works, and to the value to the architect of a competent clerk, he said that this was an age of combinations of labour, and it was very important that they should have definite principles on which to combine. The Royal Institute of British Architects had been accused of being a trades union, but he gloried in that accusation and of being a member of a body which could say

that they were trades-unionists—he meant a body for achieving certain objects. The Clerks of Works' Association existed for self-defence and for the protection of its members from any infringement of their rights. It was very important also that they should unite to establish the standard of fair remuneration, which would secure a man of high character and would prevent bribery—such as was practised in the building trade in Continental towns. The secret of such bribery in foreign parts was that men were underpaid. Another advantage of such Associations was that they led to the establishment of a standard of efficiency among the members, and he was very glad to know that the clerks of works had done this, *i.e.*, only admitted men who had had a certain number of years of experience at their work, and had also made it compulsory for a clerk under the age of forty, who desired to join the Association, to pass the excellent examination of the Carpenters' Company. There were excellent means now for giving young men satisfactory training in every branch of building work, and the education that they received was a guarantee of their thorough mastery of their business. A great pitfall of the workmen's trades unions was that they desired to be paid irrespective of their qualifications, and he was glad to know that the Clerks of Works' Association did not accept that view.

Mr. P. J. King, President of the Association, responded, and said that the Association had been in existence fifteen years, and their membership was now about 150.

Mr. Nightingale, past President, proposed "The Visitors," coupled with the names of Mr. H. T. Hare and Mr. Lewis Solomon.

Mr. Hare having briefly replied,

Mr. Solomon said that a clerk of works was often called upon to do work that was not in his province. A clerk of works should possess three qualities, viz., truth, thoroughness, and content. Every good architect wished a clerk of works to do his duty and only his duty, which did not include acting as architect.

Mr. A. S. Flower then gave the toast of "The Press," coupled with the name of our representative, who replied; and the other toasts were "The Hon. Treasurer, Mr. J. Oldrid Scott," proposed by Mr. Spooner, and acknowledged by Mr. T. Edmund, Vice-President; and "The Chairman," proposed by Mr. J. G. Peacock.

APPLICATIONS UNDER THE 1894 LONDON BUILDING ACT.

AT recent meetings of the London County Council, the Building Act Committee brought up the following lists of applications under the 1894 London Building Act. Those applications to which consent has been given are granted on certain conditions.*

Lines of Frontage.

Hampstead.—Rebuilding of the "Cock-and-Hoop" public-house, and the erection of two houses with shops on the north side of West-end-lane, near West-end-green (Mr. M. T. Saunders for Reid's Brewery Company, Limited).—Consent.

Poplar.—A one-story addition to No. 102, East India Dock-road (Mr. T. D. Burt and Mr. C. E. Theis for trustees of the Poplar Liberal Club).—Consent.

Finsbury, Central.—Wood and slate pents at Nos. 1 and 3, Middleton-road, Muswell Hill (Mr. T. Waple).—Consent.

Lewisham.—Three two-story houses with two-story bay windows on the north side of Beacon-road, Hither Green-lane (Mr. J. W. Webb).—Consent.

Marylebone, East.—A porch and an additional story to the bay window in front of No. 45, Queen's-road, St. John's Wood (Messrs. Booth & Fox for Mr. T. Richards).—Consent.

Woolwich.—A covered way upon part of the forecourt of No. 43, Rectory-place (Mr. J. O. Cook for Mr. A. Moore).—Agreed.

Peckham.—One-story shops upon the forecourts of Nos. 747, 749 and 751, Old Kent-road (Mr. E. Crosse for Messrs. W. Cooper, Limited).—Agreed.

Wandsworth.—One-story shops upon part of the forecourts of Nos. 153, 155, 157, 159, 161, 163, 165, 167, and 169, Balham High-road (Mr. W. C. Jones for the freeholders and lessees of the property).—Agreed.

Wandsworth.—A conservatory on part of the forecourt of Balham railway-station, Balham High-road (Mr. R. Cruwys for Mr. M. Edwards).—Agreed.

Strand.—A glass and iron shelter to project over the public way in front of the principal entrance to No. 3, Cleveland-square, St. James's (Mr. M. E. Collins).—Refused.

Dulwich.—A one-story shop upon part of the yard at the rear of No. 69, Denmark Hill, Camberwell, to abut upon Selborne-road (Mr. J. A. Ham).—Refused.

Fulham.—A three-story addition to 676, Fulham-road, to abut also upon Rostrevor-road (Mr. W. F. Harriss for Mr. G. Burch).—Refused.

Lewisham.†—No. 69, Engleheart-road, Catford, with the flank to abut upon Jutland-road (Mr. J. Lawrence).—Refused.

St. George, Hanover-square.†—A bay window, at the first floor level, in front of No. 45, Farm-street (Mr. R. B. Marsh for Mr. J. Innes.)—Refused.

Line of Fronts and Width of Way.

Newington, West.—An engine-house and office at the proposed electric generating-station on the site of Nos. 22 to 34, Penrose-street (Messrs. Kincaid, Waller, and Manville for the Vestry of St. Mary, Newington).—Consent.

Rotherhithe.—A wall and buttress at Hanover-buildings, Tooley-street, at less than the prescribed distance from the centre of Fair-street (Mr. J. Hartnoll).—Agreed.

Brixton.—A one-story addition upon the forecourt of a workshop next No. 1, Station-road (Mr. F. Harmer).—Refused.

Deptford.†—A two-story addition at the rear of Nos. 199 and 201, Lewisham High-road, to abut upon Lucas-street (Mr. J. J. Downes for Messrs. Haycraft & Son, Limited).—Refused.

Peckham.—A one-story addition in front of a workshop on the east side of Devonshire-grove, Old Kent-road (Mr. E. Crosse for Messrs. W. Cooper, Limited).—Refused.

Strand.†—A glass and iron covered way in front of the Loudoun Hotel, Surrey-street, Strand (Messrs. Ventom, Bull, & Cooper, for the Loudoun Hotel, Limited).—Refused.

Width of Way.

Islington, North.†—A building on the south side of Bowman's-place, Holloway (Mr. J. J. Connelly).—Consent.

Norwood.—A one-story addition to stables at the rear of No. 221, Gipsy-road, Lower Norwood, at less than the prescribed distance from the centre of way leading out of Hamilton-road (Messrs. Marshall & Nelson for Dr. J. S. Sharman.—Consent).

Poplar.—A shed for storing teak on the west side of New-road, near the South Dock entrance gate, erected partially at less than the prescribed distance from the centre of the road (Mr. H. F. Donaldson for the London and India Docks Joint Committee).—Consent.

St. Pancras, North.—A variation from the plan sanctioned on November 30, 1897, for the erection for the erection of a boiler-house and chimney-shaft at the Imperial Steam Laundry, Ingestre-road, Dartmouth-park, so far as relates to the erection of the proposed chimney-shaft (Mr. J. M. Kennard for the London United Laundries, Limited).—Consent.

Hampstead.—An addition to the laundry at Hampstead Workhouse, on the north side of Streatley-place, at less than the prescribed distance from the centre of the road (Mr. K. D. Young for the Guardians of Hampstead).—Consent.

Kennington.—An addition at the rear of No. 106, Ethelred-street to abut upon Gundulf-street (Mr. J. Hamilton for the New London Brewery Company).—Consent.

Hackney, North.—Widening of part of Northwold-road, eastward of Alconbury-road (Mr. C. Cheston).—Agreed.

Limehouse.—Two blocks of buildings, to be inhabited by persons of the working class, at less than the prescribed distance from the centre of Bere-street and Cranford-street, respectively (Housing of the Working Classes Committee of the Council).—Agreed.

St. George-in-the-East.—A dwelling-house, with shop, on the north side of Watney-passage at the rear of No. 52, Watney-street, the ground story portion of the new building to abut also upon Winterton-street at less than the prescribed distance from the centre of that street (Mr. W. Stewart for Mr. C. Craze).—Agreed.

Woolwich.—A mission hall on the east side of Vicarage-road at less than the prescribed distance from the centre of a street leading from that road into Villas-road (Mr. H. F. Sandford).—Agreed.

Wandsworth, detached.—Widening and laying out for building of part of Croxted-road, Herne Hill, between the London, Brighton, and South Coast Railway and Turney-road (Mr. F. N. Kemp for Mr. H. N. Grenside).—Agreed.

Woolwich.†—Buildings on the east side of Henley-road, North Woolwich (Mr. A. E. Salmon for Henley's Telegraph Works Company, Limited).—Refused.

Lewisham.†—An addition at the rear of No. 16, London-road, Forest-hill, to abut upon Havelock-street at less than the prescribed distance from the centre of that street (Mr. J. R. Vining for Messrs. Mayo & Co.).—Refused.

Width of Way and Deviation from Certified Plans.

Walworth.—A one-story addition at the rear of No. 41, Walworth-road, Newington, to abut upon Ostend-place, and that sanction be given to certain deviations from the plan certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the erection of the proposed addition (Messrs. Canning & Mullins for Mr. W. H. Hurlock).—Consent.

Width of Way and Space at Rear.

Finsbury, Central.—That the application of Mr. F. Swift for Mr. H. Roffey be granted for an extension of the period within which the erection of shops with rooms over on Lots 37C, 39, 40, 41, 42, and 43 of the Council's land in Rosebery-avenue, Clerkenwell, was required to be commenced.—Agreed.

Line of Fronts and Construction of Buildings.

Clapham.—A wood and glass show case at No. 78, Northcote-road, to flank upon Bennerley-road, Battersea (Mr. C. D. Collins).—Refused.

St. Pancras, East.—Temporary stabling on the northern side of Great Randolph-street, Camden Town, partly under the viaduct of the North London Railway (Mr. J. J. Connelly for Mr. P. Hearn).—Refused.

Line of Fronts and Space at Rear.

Hammersmith.—That the Council, in the exercise of its powers under Sections 22 and 73 of the London Building Act, 1894, do not consent to the erection of a block of residential flats, with three-story bay-windows, in Addison-gardens, and of a shop with flats over on the north-west side of that street, to abut also upon Blythe-road; and that the Council, under Section 41 of the Act, do not allow, nor sanction, the erection of the said buildings respectively with an insufficient open space at the rear, and with portions of each building to extend above the diagonal line as directed to be drawn by the Act (Messrs. Booth & Fox for Mr. Carr).—Agreed.

Deviations from Certified Plans.

Strand.—Deviations from the plan certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding of the "Nag's Head" public-house, No. 31, Foubert's-place, Regent's-street, St. James's (Messrs. Goodwyn & Sons for the Lion Brewery Company).—Agreed.

Strand.—That Messrs. Goodwyn & Sons be informed, with reference to their application for the Lion Brewery Company for the sanction to certain deviations from the plan certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding of No. 29, Foubert's-place, Regent-street, St. James's, having regard to the fact that more land is shown upon the deposited block plan as to be occupied by the proposed new buildings than was occupied by the building previously on the site, the application is one which, in the Council's view, it has no power to entertain, and has, accordingly, neither considered the application nor given any decision thereon.—Agreed.

Open Space about Buildings.

St. George, Hanover-square.—A three-story addition on part of the open space at the rear of No. 34, Charles-street, Mayfair (Mr. C. Scholefield for Mrs. Burrall Hoffman).—Agreed.

Finsbury, Central.—That the Council do, in the exercise of its powers under Section 41 (iv.) (a) of the London Building Act, 1894, refuse to permit the erection of buildings not exceeding 30 ft. in height, upon part of the open space at the rear of the "George the Fourth" public-house, No. 39, Goswell-road, at the corner of Great Sutton-street (Mr. G. Hubbard for Mr. H. Leach).—Agreed.

Width of Way and Construction of Building.

Greenwich.—A wooden shed at the wharf premises, Bugsby's Hole, East Greenwich (Messrs. Flower & Everett).—Consent.

Camberwell, North.—An open iron van-shed at the eastern end of Bullace-row, on part of the gardens in the rear of Nos. 6, 7, 8, 9, and 10, Mazzard-row, at less than the prescribed distance from the centre of the road (Messrs. J. Ham & Son, for the Winchester Brewery Company, Limited).—Refused.

Formation of Streets.

Wandsworth.—That an order be sealed and issued to Mr. P. E. Pilditch sanctioning the formation or laying-out of a new street for carriage traffic, to lead out of the north side of Portsmouth-road, Putney Heath, and the widening of a portion of the road from Roehampton to Wimbledon on the east side of the estate. That the name Heathview-gardens be approved for the new street.—Agreed.

Hackney, South.—That an order be sealed and issued to Messrs. F. Chambers & Son (for Messrs. Longbourne, Stevens, & Powell) sanctioning the formation or laying-out of a new street for carriage traffic, to lead out of Lea Bridge-road, and the formation or laying-out of a new street for carriage traffic, to lead out of Chatsworth-road, in continuation of Fletching-street. That the names Fletching-street (in continuation) and Wattisfield-road be approved for the new streets.—Agreed.

St. George, Hanover-square.—That an order be sealed and issued to Mr. F. Balfour (for the Duke of Westminster) sanctioning the formation or laying out of a new street for carriage traffic, to lead out of

* Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.

Aldford-street into South-street. That the name Balfour-mews be approved for the new street.—Agreed.

Bermondsey.—That an order be sealed and issued to Mr. R. Dickins (for Lord Llangattock) sanctioning the formation or laying out for carriage traffic of a street, 40 ft. wide, to lead out of Paragon-road into New Kent-road, the widening to 40 ft. of Paragon-mews, and, on the expiration of a lease terminating at Michaelmas, 1907, the widening of a portion of Paragon-road, St. George-the-Martyr, Southwark. That the name Searles-road be approved for the new street.—Agreed.

Wandsworth.—That an order be sealed and issued to Mr. R. C. T. Gordon (for Messrs. A. & J. Wise) refusing to sanction the formation or laying out of two new streets for carriage traffic, to lead out of the west side of Garratt-lane, and the widening of that lane and Trewint-street, on the Garratt Park Estate, Earlsfield.—Agreed.

Lewisham.—That an order be sealed and issued to Mr. J. W. Webb refusing to sanction the formation or laying out for carriage traffic of two new streets, 40 ft. wide, to lead out of Brockley-road and Brockley-lane respectively.—Agreed.

St. Pancras, North.—That an order be sealed and issued to Messrs. Boehmer & Gibbs (for Mr. A. W. Armstrong) refusing to sanction the formation or laying out for carriage traffic of a new street to lead out of the west side of Highgate-road, the surrender of a portion of the estate for the formation of a street on the east side of Parliament Hill, and the dedication to the use of the public of certain land.—Agreed.

Wandsworth.—That an order be sealed and issued to Mr. E. Berry (for the Earl of Leven and Melville) refusing to sanction the formation or laying out for carriage traffic of a new street, 40 ft. wide, to lead out of and return into the east side of Roehampton-lane, Putney, and the widening of a portion of that lane.—Agreed.

Bermondsey.—That an order be sealed and issued to Mr. W. S. Cooke sanctioning the formation or laying out, for carriage traffic, of an extension of Sun-street, 20 ft. wide, to lead into Riley-street, on behalf of the School Board for London. That the name Sun-street (in continuation) be approved for the new street.—Agreed.

Kensington, South.—That an order be sealed and delivered to Mr. W. G. Hunt sanctioning the formation or laying out of a new street, for carriage traffic, to lead out of Addison-road, on behalf of Messrs. W. and A. Wheeler and Mr. W. Warren. That the name Oakwood-court be approved for the new street.—Agreed.

Lewisham.—That an order be sealed and issued to Mr. W. H. Collier, refusing to sanction the formation or laying out, for carriage traffic, of a new street, 40 ft. wide, to lead out of Wearside-road, Ladywell.—Agreed.

Buildings on Cleared Areas.

Chelsea.—That the Council, under Section 44 of the London Building Act, 1894, do disapprove of the plans and drawings submitted with the application of Messrs. Bourchier & Galsworthy, for Messrs. Holt & Sons, for a modification or relaxation of so much of the provisions of Part V. of the Act as relates to a block of residential flats, seven stories high, proposed to be erected on the east side of D'Oyley-street, on the sites of Nos. 12 and 13, and part of Nos. 11 and 14.—Agreed.

Means of Escape at Top of High Buildings.

Strand.—That the Council, under Section 63 of the London Building Act, 1894, do grant a certificate in respect of the means of escape, in case of fire, proposed to be provided for the persons dwelling or employed on the sixth and seventh floors of No. 49, Pall Mall, St. James's (Mr. M. E. Collins for Mr. H. Lovatt).—Agreed.

Strand.—That the Council, under Section 63 of the London Building Act, 1894, do grant a certificate in respect of the means of escape, in case of fire, proposed to be provided for the persons dwelling or employed in the top floors of Horrex's Hotel, Strand, at the corner of Norfolk-street (Messrs. White & Co.).—Agreed.

Strand.—That the Council, under Section 63 of the London Building Act, 1894, do not grant a certificate in respect of the means of escape, in case of fire, proposed to be provided for the persons dwelling or employed in the two top floors of Clun House, Surrey-street, and in the top floor of an extension of the Howard Hotel, Norfolk-street, to abut upon Surrey-street (Messrs. White & Co.).—Agreed.

Westminster.—That the Council, under Section 63 of the London Building Act, 1894, do not grant a certificate in respect of the means of escape, in case of fire, proposed to be provided for the persons dwelling or employed in the top story of the south block of Artillery Mansions, No. 75, Victoria-street (Mr. J. Calder for Mr. J. Carter-Wood).—Agreed.

Westminster.—That the Council, under Section 63 of the London Building Act, 1894, do not grant a certificate in repect of the means of escape, in case of fire, proposed to be provided for the persons dwelling or employed in the two topmost stories of the Institution of Mechanical Engineers, Storey's-gate, Birdcage-walk (Mr. A. Bache for the Institution).—Agreed.

Recommendations marked † are contrary to the views of the Local Authorities.

ARCHITECTURAL SOCIETIES.

EDINBURGH ARCHITECTURAL ASSOCIATION.—At a meeting of the Edinburgh Architectural Association, held in the Royal Institution on the 9th inst.—Mr. Thomas Ross, President, in the chair—a paper on "The Vernacular of the Wren School" was read by Mr. J. A. Williamson. Mr. Williamson gave a short history of the Renaissance of Great Britain from the earliest period of its influence in the reign of Henry VIII. till the beginning of the seventeenth century, when the architectural authority of Inigo Jones became paramount. Sir Christopher Wren, as the acknowledged head of the school, was next dealt with. His several distinct achievements in design were described. Mr. Williamson claimed that Wren founded a strictly vernacular school of architecture, based on the principles of Italian Rennaisance, and that never having visited Italy, he approached the study of his great works as a man free from the trammels of precedent, in which perhaps the instinct of the engineer rather than the artist predominated. After a reference to the successors of Wren, including such architects as Hawksmoor and Vanbrugh, the lecturer concluded by referring to the cosmopolitan character of the architecture of the present day, arguing in favour of a return to the best examples of the Wren school. The lecture was illustrated by limelight views.—The Association visited on the 12th inst. the new buildings of the Prudential Assurance Company, Limited, in St. Andrew-square, Edinburgh, under the leadership of Mr. Clark, the clerk of works. The members also paid a visit to the premises of Charles Jenner & Co., Princes-street, where they were conducted over the building by Mr. W. Hamilton Beattie, architect. An inspection was afterwards made of the Edinburgh Stock Exchange, where Mr. P. Maxton Cunningham acted as guide.

ARCHITECTURAL ASSOCIATION OF IRELAND.—On Monday night a meeting of the Architectural Association of Ireland was held at the Grosvenor Hotel. The President occupied the chair, and Mr. Cecil Orr gave a lecture on the "History of Architecture." He first showed the origin of design from natural objects, and the rise of Greek architecture from Egyptian and Assyrian work. He pointed out that Roman architecture was a development of Greek work united to the architecture which they had got from the Etruscans. He next showed how Constantine the Great had transplanted the Roman arts to Constantinople, his new capital, where they became united with the eastern work of the Sassanians and Phœnicians. Here Mr. Orr broke off his treatment of European work with the remark that the native work of Ireland was derived, not from the Byzantine school, but from the common origin with the Phœnicians through Carthage. He then dealt at some length with Moorish architecture. In his second lecture Mr. Orr will deal with the development of Gothic architecture.

COMPETITIONS.

FIRE STATION, &C., BOOTLE.—The award in the competition for a central fire station, firemen's dwellings, and district police station, to be erected at Bootle, has just been made known. The first premiated design is by Mr. C. J. Anderson, 36, Dale-street, Liverpool, the second premiated design being by Messrs. Briggs & Wolstenholme, Central Buildings, Richmond-terrace, Blackburn.

Correspondence.

To the Editor of THE BUILDER.

EASTLEIGH PUBLIC OFFICES COMPETITION.

SIR,—In your last issue you appear to be surprised at the result of the above being known so soon—and no wonder!

The drawings were sent in on February 7; on February 9 printed letters announcing the result were sent to competitors, and the drawings were returned and delivered in London on the 10th! I enclose the printed letter sent. You will observe no mention is made of the number of sets of drawings received. I shall be interested to hear how many sets of drawings this fair-minded Council considered in the time.

From the conditions of competition, in the light of after events, the following extracts cannot but prove entertaining:—

"Any attempt to unduly influence the decision of any assessor will disqualify a competitor.

The Council will probably call in the assistance of an assessor, but do not bind themselves to do so."

If there is any remedy I should be happy to join any others in taking it. I think the Institute should forbid any members competing where there is no definite undertaking to have a professional referee—and I wish every member of the profession would only compete under this condition. The Council also reserved the right to exhibit the drawings. I enclose my name and address if any other competitors care to communicate with you.

A DELUDED COMPETITOR.

*** We have received other letters on this subject; and certainly the fact that the selection was so quickly made and that (apparently) no professional assessor was called in looks rather as if there was a foregone conclusion.—ED.

TEXT-BOOKS OF FRENCH ARCHITECTURE.

SIR,—Can you or any of your readers kindly inform me if there is such a thing as an architectural map of France? Further, are there any handbooks specially adapted for a travelling student, and dealing with all the principal monuments of a district from an architectural point of view? If not, is there any little manual other than Corroyer and well-known text-books, which would be specially useful?

E. H.

The Student's Column.

THE CALCULATION OF STRENGTH OF MATERIALS AND RESISTANCES.—VIII.

IN introducing to our students the formula for an iron girder, which we gave in Chapter II., we pointed out the limited application which that formula possesses for practical use in the designing of ironwork. More exact calculations, and more satisfactory results, can be obtained by making use of the theory of moments, with which we now propose to deal. The moment of a force is the measure of its activity on any particular point, or, in other words, the moment of a force about a point is the name given to the power which that force possesses to turn anything round that point. If we suppose around any point P a number of forces X, Y, Z, are represented, as shown in the diagram fig. 1, by lines AB, CD, EF, the turning

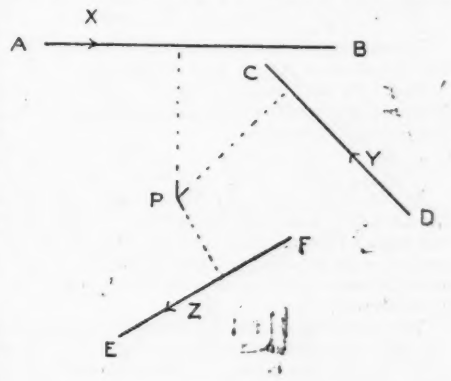


Fig 1

effect which these forces have about the point P is represented in each case by the amount of the force X, Y, or Z multiplied by the perpendicular distance on the lines AB, CD, EF from the point P; so that we may say that the moment of a force about a point is equal to the product of the force multiplied by its perpendicular distance from the point about which it acts.

If the point is at rest or in equilibrium under the action of two or more forces, it can only be so when the effect of those forces which have a tendency to cause it to rotate in one direction is exactly balanced by the effect of those forces, which have a tendency to cause it to rotate in the other direction. To estimate this it must be remembered that the extent of the effect and tendency of each force is represented by its moment.

The theory of moments is the underlying principle governing the action of the mechanical device known as the lever, and the operation of the theory of moments may, perhaps, be best understood by referring to examples of the lever. Let us suppose, in the

diagram fig. 2, that a rigid bar, whose weight for the sake of simplicity we will ignore, is represented by the line A B, and supported on a point or fulcrum C; let us suppose the

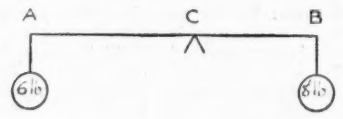


Fig 2

length A C to be 4 ft., and the length C B 3 ft.; then if we have a weight of 6 lbs. at A, we must have a weight of 8 lbs. at C to balance it and keep the lever in equilibrium, as is shown by the equation of the moments :—

$$6 \times A\,C = 8 \times C\,B$$
$$6 \times 4 = 8 \times 3$$
$$24 = 24$$

Let us now apply the principle of moments to an investigation of the action of a load upon a beam. If we suppose, in the diagram fig. 3, that W represents a load AB whose

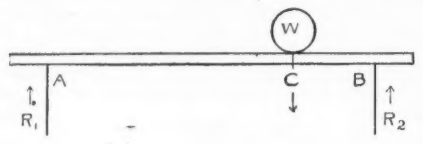


Fig 3.

points of supports are at A and B, the forces which are tending to produce strain in the beam and so to either bend or break it are the load W upon the beam, which acts vertically downwards, and the resistances of the supports at A and B, which act vertically upwards. Our beam, therefore, is a converse example of a lever in which the weight W is a fulcrum and the resistances at A and B are analogous in their action to the weights at the ends of the lever which we were considering above. The effect of the resistance at A is therefore to bend the beam with an amount of power represented by the moment of force; that is, the resistance R_1 at A about a point C at which W is acting. Similarly with the resistance R_2 of the support at B; the bending effect upon the beam is therefore represented by either of these forces or resistances multiplied by its distance from the point C. This is called the bending moment or moment of flexure, and equals

$$R_1 \times AC, \text{ or } R_2 \times BC.$$

Let us suppose the amount of W to be 6 tons, the distance AC 12 ft., and BC 4 feet.

Then R_1 is $1\frac{1}{2}$ tons, and R_2 is $4\frac{1}{2}$ tons, and the bending moment, or moment of rupture, as it is sometimes called, is

$$R_1 \times AC = 1\tfrac{1}{2} \times 12 = 18 \text{ foot—tons.}$$
$$\text{Or } R_2 \times BC = 4\tfrac{1}{2} \times 4 = 18 \text{ foot—tons.}$$

In the case of a distributed load the point about which the resistances may be supposed to be acting is the centre of gravity of the load, and this is equally true whether the load is distributed over the whole beam or over a portion only.

The student should be careful to notice that in all cases the sum of the resistances of the two supports is equal to the total load on the beam. In the case of a single concentrated load in the centre, it is quite clear that each of the resistances is equal to half the load. In the case of a concentrated load not central, each support receives a proportion of the load dependant upon its distance from the point at which the load is applied, the load being proportioned between the supports in the inverse ratio of their distances. So that, taking, for example, the instance we have given above, the load of 6 tons is divided between the supports, so that their distances being in the ratio of 12 to 4, or 3 to 1, their shares of the load are in the ratio of $1\frac{1}{2}$ to $4\frac{1}{2}$, or 1 to 3; or, in other words, the load borne by each support may be found by multiplying the whole load by its distance from the other support, and dividing by the span. In the case of distributed loads, as we have already premised, they may be supposed to be acting at their centre of gravity, and the load may then be apportioned between the two supports in the same way as if a concentrated load of the same amount as the distributed load were placed at this centre of gravity. When the student has to deal with a number of loads, whether these be concentrated or distributed, or partly concentrated and partly distributed, and whether equal or unequal, the simplest way is to deal with each load in turn and apportion a proper share of each load to each support; then the sum of the apportionments in each case will represent the load carried by each support, and, therefore, the amount of the resistance of these supports, from which the bending moment can be obtained at any particular point in the beam, such bending moment being, of course, equal to the amount of resistance of the support multiplied by its distance from the point about which the moments are taken, thus representing the effect at any particular point of any number of loads however disposed.

As the bending moment is the measure of the bending or breaking force, there must be in any stable condition of a beam some resisting power which is sufficient to balance and keep in equilibrium the force or forces constituting the bending moment. This resisting force is, of course, in other words, the strength of the beam, and its efficiency may be expressed in terms of a moment which is called the moment of resistance, and when the beam is in equilibrium and on the point of breaking, the moment of resistance equals the bending moment or moment of rupture.

In actual calculations dealing with a safe load, due regard must, of course, be given to the factor of safety, and a multiple of the moment of rupture, three, four, or five times, as the case may be, is taken to represent the bending moment, an equivalent moment of resistance to which is to be sought.

In dealing with the bending moment or moment of rupture of beams we have taken no account of the shape of the beam, for in every case the bending moment depends entirely upon the amount and position of the load, and is not affected by the form of the beam exposed to the load. But when we come to consider the moment of resistance of the beam the form of the beam is of very vital importance in determining the moment of resistance. We will first consider those beams in which each fibre throughout the entire cross-section may be regarded as opposing the bending moment by a horizontal or longitudinal resistance. This is always the case in beams of solid cross-section, whether of rectangular, circular, oval, or other such form; and also, strictly speaking, in those with thin solid webs, as rolled-iron joists and rivetted plate girders; but in plate girders it is a very common practice on the score of safety, and also on account of the small cross-section of the web, to neglect its share of the resistance and consider that only of the flanges.

In a beam of solid cross-section, then, each fibre throughout the section of the beam opposes the bending moment of the load by a resisting moment, or moment of resistance of its own. And the moment of resistance of each fibre is its resisting force or strength multiplied by its distance above or below the neutral axis, which may be taken as the point about which the force represented by the strength of each individual fibre is acting. From what has already been said on the subject of moments, the student will at once perceive that the resisting factor or moment of resistance of those fibres or parts of the beam which are furthest from the neutral axis is greater than that of those which are nearest. So that the moment of resistance of the fibres is in a constant and regularly decreasing ratio dependent entirely upon the distance of each fibre from the neutral axis or point of rotation; for we must necessarily assume that the strength or resisting force of each individual fibre is the same throughout the material. It is quite true that the strength of the individual fibres is not exactly equal, but, as we have explained in Chapter III., this lack of homogeneity is one of the reasons for the adoption of a factor of safety, and as we are always prepared to adopt the factor of safety in determining the amount of our safe loads, we are justified in assuming that the various fibres may be regarded for the purposes of our calculations as possessing uniform strength.

The fibres which are furthest from the neutral axis may be taken as exerting their ultimate or greatest strength when the beam is at the point of rupture, but from what we have already said it follows that the resistance of any other fibres depends upon their distance from the neutral axis, or, in other words, is a proportion only of their ultimate strength or resistance. This ultimate strength of each particular fibre we may call the co-efficient of resistance.

BOOKS RECEIVED.

SPECIFICATIONS IN DETAIL. By Frank W. Macey. (E. & F. N. Spon.)

LAXTON'S BUILDERS' PRICE-BOOK, 1898. (Simpkin, Marshall, & Co.)

RAILWAY MAXIMUM RATES AND CHARGES: Second Edition. By B. M. Cotsworth. (Bemrose & Sons.)

GENERAL BUILDING NEWS.

ALL SAINTS' CHURCH, EXMOUTH.—This church just opened, was designed by Messrs. Tait & Harvey, of Exeter. It is built of Berryhead limestone, with windows and doorways of Bath stone. The piers of the arcades are of polyphant stone, polished; the flooring of the chancel is of marble mosaic, and solid wood blocks form the flooring elsewhere. The roof is open timbered, and is covered with Broseley tiles. The church consists of a nave, north and south aisles, and transepts, morning chapel, chancel, baptistry, organ-chamber, and vestries for clergy and choir. The tower has not yet been built. The cost of the work so far has been about 8,000*l.* Seating accommodation is provided for 700 people. Messrs. Luscombe & Son are the builders.

LEAMINGTON PARISH CHURCH COMPLETION.—Additions to and alterations in the Parish Church of Leamington Priors are being carried out according to plans prepared by the architects, Sir Arthur Blomfield & Sons. The proposed works are as follows, namely, to restore the clearstory windows and certain decayed masonry in the existing fabric, to extend the nave westward by two bays, to erect a tower for the reception of the bells at the south-west angle of the nave, to refloor the present nave with wood blocks, and to re-arrange the seats. The work is being dealt with in sections, and the enlargement will increase the accommodation by about 400 sittings.

NEW CHANCEL, ST. JAMES'S, GUNNERSBURY.—The new chancel, which was consecrated on the 12th, is the same width as the nave, with vestries and organ-chamber on the north side. It has been carried out in the Early Pointed style, in harmony with the rest of the church, but the work in the arches, traceried windows, and credence is somewhat richer in character. In the east wall are six large lancet lights, in pairs, which will eventually be filled with painted glass; at present only the two centre lights are so completed. These are the work of Messrs. Clayton & Bell, the subjects being "The Man of Sorrows," and "The King of Glory." The screen dividing the chancel from the nave is of light, open oak work. The nave of the church has had extended pew accommodation added. The old choir stalls and altar rail have for the present been fitted up in the new chancel, and the existing organ has been moved to its new position on the north side. The building work has been executed by Messrs. Dorey & Co., of Brentford; the oak screens and reredos by Mr. Caldcleugh, of Durham; and the tile floors by Messrs. Carter, Johnson, & Co. The whole of the works have been carried out from the designs of the architect, Mr. Howard Chatfeild Clarke. The cost has been about 2,750*l.*

REOPENING OF ST. MARGARET'S CHURCH, MOUNTAIN ASH.—The Lord Bishop of Llandaff has just consecrated the additions which have been made to St. Margaret's Church, Mountain Ash. The work was commenced six months ago, and, under the superintendence of Mr. Bruce-Vaughan, Cardiff, the Diocesan Architect, a nave, chancel, organ-chamber, vestries for clergy and choir, tower with six bells, and further accommodation for 250 persons have been added to the church, at a cost of 3,300*l.*

PROPOSED NEW CHURCH OF ST. BARNABAS, MORECAMBE, LANCASHIRE.—The contract for the new St. Barnabas Church has been let to Mr. John Edmondson, and the first portion of the work, which is to cost 3,512*l.*, includes the erection of three bays of the nave, the chancel, and the north aisle. To complete the church two more bays of the nave, the south aisle, and the tower will have to be built, but this portion will not be proceeded with at present. The architects are Messrs. Austin & Paley, of Lancaster. This church, when completed, will consist on plan of a nave of five bays, 72 ft. 6 in. long by 24 ft. wide, chancel 35 ft. by 24 ft. (both nave and chancel being the same height, 43 ft. to ridge), north and south aisles 18 ft. and 11 ft. wide, chapel 29 ft. by 15 ft. on north side, opening into chancel by two arches, and having a porch as entrance, and organ transept on the south side. The vestries will be at the east end, with separate porch. At the west end will be a tower 20 ft. square externally, rising 96 ft. to parapet, with porches on the north and south sides of same. The church will be lighted by five four-light tracery windows in aisles, east window of six lights, and the west window of three lights. The roofs and seats will be of pitch pine, the chancel stalls, altar rails, and table being of oak. All roofs (except aisles and towers, which will be leaded) will be covered with Ruabon red tiles. The aisles passages and porches will be flagged, and the chancel tiled. The heating will be by low-pressure hot water.

RESTORATION OF STRATFORD-ON-AVON CHURCH.—An interesting discovery during the restoration work at Stratford-on-Avon Collegiate Church is, says the *Leeds Mercury*, that of the undoubtedly

genuine Early English lancet window in the south transept. For the purpose of placing some portions of the organ in the transept, an archway communicating with the south aisle was being formed, and when cutting through the massive stone wall the workmen came across the pointed window mouldings embedded in the masonry. The whole of the window was then gradually and carefully uncovered. Unfortunately, it is to some extent mutilated, the projecting mouldings on the inner side having been cut away to obtain a level surface for the wall. The window, which exactly matches one near it overlooking the churchyard, was blocked up about the year 1320, when John de Stratford, Bishop of Winchester, afterwards Archbishop of Canterbury, built the south aisle of the church, the east end of which abutted upon the transept, completely obliterating the window. Other interesting discoveries have been made. In getting through the foundations of the side walls for the hot-air pipes some beautifully-moulded stones, believed to be the remains of the monastery which occupied the same site some 300 or 400 years before the Norman Conquest, have been found, together with a few monastic tiles and plain quarries and a quantity of sun-dried bricks of a later period, which were brought to light in the excavations in the nave and aisles. The bricks are only about 1¼ in. thick, and are said to be at least 600 years old. Fragments of curiously-inscribed stones of the Elizabethan era have also been found, together with what are believed to be the foundations of the ascent to the altar in the chapel dedicated to the Blessed Virgin at the east end of the north aisle, now filled with tombs and monuments of the Cloptons. Near the west end, at the foot of one of the columns of the nave, embedded in the foundation, the workmen came upon a worked stone, believed to be the base of the holy water stoup, which was probably banished from the church at the time of the Reformation. The work of restoration is being carried out under the supervision of Mr. Bodley.

RESTORATION OF CHANCEL, BOURNE ABBEY CHURCH.—Bourne Abbey Church has just been reopened after restoration to the chancel. The walls and stonework of the chancel have been cleaned down and replastered. The memorial mural tablets have been raised, to give way to oak-panelling, which now extends the entire length of the chancel. The seating is of English oak. The eight terminals of the new choir benches carry emblems of the Sacrament of the Lord's Supper. The screen dividing the nave from the chancel is of English oak tracery, bearing effigies of the four Evangelists, with their emblems. The four three-light brass pendants (incandescent lights) are the work of Messrs. Elgood, Leicester. The builders' work has been carried out by Messrs. Roberts Bros., Stamford. The carved work, the emblems, and the screen, are by Messrs. Harry Hems Bros., Exeter. Mr. J. C. Traylen, of Stamford, was the architect.

PROPOSED TECHNICAL SCHOOL FOR MACCLESFIELD.—The Macclesfield Town Council have adopted the minutes of the Technical Instruction Committee, sanctioning the erection of a new technical school on the site of the Useful Knowledge Society's premises on Park Green, which have been bought for 2,000*l.* The total cost will be about 6,000*l.* Mr. James Stevens, of Manchester and Macclesfield, is the architect.

PROPOSED TECHNICAL SCHOOL, GLOSSOP.—At the meeting of the Glossop Town Council, on the 9th inst., plans were submitted of a technical school, which Lord Howard proposes to build on a site opposite the Free Library. The architects are Messrs. Douglas & Minshull, of Chester. The school will be three stories high.

INFANT SCHOOL, LEEDS.—The new infant school in Hunslet Hall-road, Leeds, was opened on the 10th inst. The building is built of brick, with stone dressings, and is intended to take the place of the present Bewerley-street Infants' School. The site contains nearly 7,000 square yards, and is bounded on three sides by wide streets. The school is arranged for 720 infants, who will be accommodated in eight class-rooms (sixty each) and two large rooms, each containing accommodation for 120. These latter rooms are to be used for babies only, and are provided with open fireplaces. A large assembly hall is provided, into which the class-rooms will open direct. Three entrances are provided, with cloak-rooms adjoining, and there are large playgrounds. A separate building is provided at one angle of the playground for a manual training workshop and class-room, which will take the place of the Bewerley-street School workshop. The dados inside the school are glazed brick; all the inside woodwork is pitch-pine varnished. The total cost of the site, buildings, and fittings (including workshop fittings and caretaker's house) is 13,100*l.* The buildings have been erected from plans prepared by Mr. Braithwaite, the Architect to the board. The contracts for the work have been carried out as follows:—Stone and brickwork, by Mr. William Airey; joiners' work, Mr. B. Wood; plumbing work, Mr. J. E. Bedford; plastering work, Messrs. Pennington & Son; slaters' work, Messrs. Watson & Worsnop; painting work, Mr. Cameron; concreting work, Mr. McFarlane; ironwork and heating arrangements, Messrs. Holmes & Co.; gas-fittings and cloak-rails, Messrs. Longfield & Co.

PROPOSED OPERA HOUSE, ILKLEY.—The erection of an opera house is included in what has now become known as the Ilkley Winter Garden scheme. Plans have been prepared by Mr. F. Matcham, of London. The building, which will have a frontage to Wells-road, is estimated to cost about 13,000*l.*, and, in addition to the opera house, it has been decided, since the plan was prepared, to add a large dining-room. The opera house itself is to seat about 1,500.

BUILDING IN ABERDEEN.—The Plans Committee of the Aberdeen Town Council have sanctioned plans of the following:—New shop front at No. 80, Waterloo Quay, for Mrs. Joss, per Mr. William Smith, architect; two dwelling-houses on the south-west side of Elmfield Avenue, for Mr. Robert Mitchell, builder, per Mr. James Mitchell; seven dwelling-houses on the south side of Victoria-road, Torry, for Mr. Isaac Emslie and Mr. John W. Forbes, per Mr. William Ruxton, architect; dwelling-house, milk-shop, stable, and coach-house on the south side of Belvidere-place at its junction with Craigie Loanings, for Mr. Alexander Hall, per Messrs. Walker & Duncan, architects; four dwelling-houses on the west side of Blenheim-place, for Mr. John M'Gregor, builder, per Mr. William Beattie, architect; alterations in connexion with property at the corner of Back Wynd and Gaelic-lane, for Mr. William Reid, per Messrs. Brown & Watt, architects; provision works on the west side of new street running northwards from Links-street, for the executors of the late Mr. William Bruce, per Mr. Alexander Mavor, architect; three dwelling-houses on the west side of Ann-street, for Mr. Hugh Macdonald, per Mr. Duncan Hodge, architect. The committee had before them the plan of a stone-polishing mill, &c., on the north side of an intended new street running eastward from King-street, for Mr. Thomas J. Blann, per Mr. William Smith, architect, but could not sanction the plan, as the proposed street has not yet been sanctioned by the Town Council.

BUILDING IN BOLTON DISTRICT.—The monthly meeting of the Rural District Council for the Bolton Union was held on the 2nd inst., at the Poor Law Offices, Mawdsley-street, when the Clerk submitted the proceedings of the General Purposes Committee, which includes various departments, during the past month, and they were agreed to by the Council. During the year 229 plans were submitted, against 207 last year. Those approved totalled 185 against 168, and those disapproved numbered 44 as against 39. The plans which have been submitted are for the following amongst other purposes, viz., the erection of 522 dwelling-houses; additions to dwelling-houses, 75; additions to farms, 12; additions to bleachworks, 4; and for new dyeworks in Breightmet; and new Board school at Belmont. Of the 522 dwelling-houses, the numbers in the respective townships are as follows:—Smithills 167, Tonge 125, Great Lever 83, Middle Hulton 65, Over Hulton 37, Heaton 21, Harwood 20, and Lostock 4.

BUSINESS PREMISES, MAIDENHEAD.—A new furniture depository has been erected in Bell-street, Maidenhead, for Mr. Truscott. The building is of red brick, and was erected by Mr. John Wells, from plans prepared by Mr. C. A. Vardy.

PROPOSED ENLARGEMENT OF M'CHEYNE MEMORIAL CHURCH, DUNDEE.—Mr. Sidney Mitchell, Edinburgh, has prepared plans for the enlargement of this building. The cost of the enlargement will be about 3,000*l.*

NEW BUILDING FOR THE ROYAL INSURANCE COMPANY, LIVERPOOL.—The corner-stone of a new building for the Royal Insurance Company has just been laid in North John-street, Liverpool. When the directors of the company decided upon raising a new building, competitive designs were invited, and the architect chosen was Mr. J. Francis. Doyle, of Liverpool, whose plans were put first by the assessor, Mr. Norman Shaw, R.A. The style is Classic, adapted to modern requirements. The substructure is composed of grey Aberdeen granite to a height of 30 ft. above the pavement level. The superstructure will be composed of white Portland stone, and roofed with green slates. To the Dale-street front will be a gable rising 110 ft. above the pavement. In North John-street will be placed the main entrance, which will be surmounted by a tower 150 ft. high. At the south end will be the entrance for tenants, which also is embellished by a tower. A feature in the building is the steel construction, mainly introduced to obviate the necessity of columns on the ground floor, which for the entire length will be utilised as the general offices of the company. The main weight-carrying girders are placed upon the third floor, resting at the ends upon steel stanchions built into the walls, and from which are slung the two floors immediately beneath. Internally, it is intended very largely to utilise marble faience or panelling for the walls in lieu of the ordinary plaster, this material being reserved for ceilings only. The building, rectangular in shape, will be about 220 ft. long by 52 ft. wide, and on the ground floor the general office will be of the dimensions of 194 ft. long, 48 ft. wide, and 21 ft. high. The private offices will also be on this floor, facing Dale-street, and only separated from the general office by a hall 20 ft. square. On the floors immediately above will be arranged the various official departments required for the company's business, including an apartment for the board of directors. It is also intended on the top floors to provide dining accommodation for the staff, the whole of the basement being reserved for the strong rooms and store space for books, &c. On the upper floors, at the south end of the building, will be offices arranged for letting purposes. It is proposed to heat the whole of the interior by hot water on the low-pressure system, and to light it by electricity. Elevators will be provided in both entrances. The new building will extend from Dale-street to the return side street, a distance of 212 ft., but the present operation only consists of two-thirds.—*Liverpool Mercury.*

THE GUILDHALL ART GALLERY.—The Corporation of London have recently sanctioned a scheme for the extension of the Art Gallery at the Guildhall at an estimated expense of 1,600*l.* The plan which has been prepared by Mr. A. Murray, the City Architect, shows the absorption of the ground-floor offices of the Land Tax Commissioners and the Mayor's Court in Guildhall-yard. The newly-acquired space will consist of three rooms connected with each other and lighted with separate skylights, a connexion with the existing galleries being made. The total floor area of the additional rooms is about 1,700 ft. superficial. Accommodation has been arranged for the Mayor's Court officials by utilising space now occupied by the Land Tax Commission. It has, however, been decided that no steps shall be taken to carry the scheme into effect until equivalent accommodation at the existing rent has been provided in or about the Guildhall for the Tax Commission, whom the proposal would displace.—*Times.*

BANK PREMISES, WORTHING.—The Capital and Counties Bank, Worthing, having secured a large block of premises adjoining the Municipal Offices in South-street, the principal street in the centre of the town, have rearranged the whole of the basement, ground, first, second, and third floors. The ground floor has been refronted with Bath stone, having red polished and fluted granite pilasters, with blue pennant stone, moulded bases, and carved capitals. The work has cost about 3,600*l.*, and has been executed by Messrs. Frank Sandell & Sons, of Worthing. The work of warming by hot water was carried out by Mr. John Philips, of Brighton; the wood block flooring in teak and oak by Messrs. Longley & Charteris, of Crawley, Sussex; the marble mosaic pavement by Messrs. Mainzer & Co.; the brass and ironwork by Messrs. Hardmann, Powell, & Co.; the strong room fittings by Messrs. Chubb and the Ratner Safe Company; and the fireproof flooring by Mark Fawcett & Co. Mr. R. Singer, of Worthing, was the architect.

SANITARY AND ENGINEERING NEWS.

BRIDGE ACROSS THE TAWE.—A new bridge, erected by the Swansea Harbour Trust to supersede the bridge that has provided means of access between Swansea proper and St. Thomas, has just been opened. The bridge has cost about 30,000*l.*, and was designed by the engineer, Mr. Schenk, the contract being given to Messrs. Handyside, of Derby, with sub-contracts to Messrs. Armstrong and other firms. The bridge provides for two lines of road traffic, one of railway traffic, and two for foot-passengers. The old bridge was a drawbridge, and this one is a swing bridge. The swinging portion of the structure is 72 ft. long on the land side from the centre of rotation, and 92 ft. 6 in. measured from the same point over the navigable channel, while there is a fixed portion on the eastern side of the swinging span 70 ft. 9 in. long, making the total length from side to side 234 ft. 6 in. The total width of each roadway for vehicular traffic is 7 ft. 6 in.; the width of each footway 6 ft. 3 in., and the width of the railway 5 ft., making, together with the necessary clearances, 45 ft. over all. The main girders are 27 ft. apart in the clear, braced together overhead at the centre of the swinging span, this giving a height in the middle of 20 ft. clear. The bridge swings up stream, and is made to revolve by hydraulic machinery placed in a house on top of the main girders in the centre of the bridge, the gear being under the control of one man. The bridge is protected when open by a timber dolphin, composed of piles driven into the bed of the river, and braced together on the Channel side with continuous vertical fenders.

WATER SUPPLY TO COUNTY ASYLUM, MORPETH. At a meeting of the County Council of Northumberland the report of the Committee of Visitors regarding the proposed water supply to the County Asylum at Morpeth was unanimously adopted. The scheme provides for the conveying of water in a 6 in. main from a spring at Doe Hill in the Witton Shields district to the Asylum, a distance of over seven miles. The mains are to be of cast-iron pipes, properly coated, and to be tested to a head of 600 ft. at the maker's works, and, after being laid and jointed in the trenches, are to be tested to a pressure of 50 per cent. more than the working head, thereby minimising any chance leakage. Sufficient stop, scour and air valves will be placed on the system. The spring, which can give the present inhabitants of the Asylum 100 gallons daily per head, being much in excess of the quantity of forty gallons required by the Lunacy Commissioners, is subject to very slight seasonable variation. At the source an iron cylinder will be sunk down to the level of the spring, the water then being conveyed to a storage-

tank adjoining, built of concrete, with arched roof, at which a meter will be placed, as well as at the Asylum, to record water leaving the reservoir and delivered at the Asylum before entering the water towers there. The water has been examined bacteriologically and chemically, and found to be of excellent quality. The scheme has been designed by Messrs. D. Balfour & Son, engineers, Newcastle.

NEW SEWAGE WORKS, MIDSOMER NORTON.—The new works which have been constructed by the Midsomer Norton Urban District Council were opened on the 8th inst. Messrs. W. Thomas and Alfred Webb (Bristol) were the contractors, and the engineer was Mr. W. F. Bird.

SEWAGE PURIFICATION: THE SALFORD EXPERIMENTS.—Mr. H. Gilbert Whyatt, Deputy Borough Surveyor for Salford, read a paper entitled "The Present Position of the Sewage Purification Problem," at a meeting of the Sanitary Inspectors' Association (Lancashire and Cheshire Branch), held at the Royal Technical Institute, Salford, on Saturday afternoon, the 12th inst. After briefly sketching the recent history of sewage purification and the principal processes which had been adopted, Mr. Whyatt proceeded to describe the recent experiments at Salford. About five years ago the Committee turned their attention to artificial filters. The first set of six filters were arranged at three heights with a ventilation floor between each 20 in. of filtering materials. Two filters were composed of gravel and sand, two of coke breeze, and two of cinders, and very good results were at once obtained from them all. Cinders proved the best filtering medium. The experiment was continued for fifteen months, at an average rate of 500 gallons per square yard per day, with very successful results. It was then wished to prove the advantage of a preliminary "roughing" filter and varying degrees of aeration; and this experiment was still going on. The filters were tried at varying rates of flow, and so long as a filter did not choke up the effluent was uniformly good. If the filter choked up it was found that by leaving it idle for a week or two it would recover itself and again take the sewage perfectly. In 1895 two filters 8 ft. deep were made in order to ascertain whether a deeper mass of filtering material would deal with a larger quantity of effluent, and it was found that while a 5-ft. filter would deal with 500 gallons per yard daily, an 8-ft. one would deal with 800 gallons. In 1896 the filters were run practically continuously for twelve months at the rate of 1,000 gallons per square yard per day, then for a short time at 500 gallons, and now at 700 gallons, the only rest being for a short time daily whilst the small pump supplying them was cleaned. Contrary to expectations, they stood that severe test. In place of the sprinkling troughs, spray jets were now used. The surface of the filter was perfectly open, and water was not allowed to collect anywhere. There had been no appreciable growth of the brown sewage fungus since 1895, and the bacterial filters had been protected by a "roughing" filter of fine gravel. Some twenty-five precipitation experiments had been tried, and the effluent of all passed through the bacterial filters with good results. The Corporation had resolved to spend 80,000*l.* in altering the works and laying down bacterial filters, but the Local Government Board had refused its sanction unless the Corporation included a sum to cover the purchase of land over which the filter effluent might be turned and further purified. Mr. Whyatt considered the time had come when the Local Government Board should be roused from its state of "agnostical immobility" and take upon itself to examine whether there was not the efficiency in bacterial filters that was claimed for them.

FOREIGN.

FRANCE.—The Department of Fine Arts has commissioned M. Léopold Flameng to make an engraving of the celebrated triptych of Van der Goes, "The Adoration of the Shepherds," at the hospital of Santa Maria Novella in Florence.——The Department of Commerce has given its approval to the general plan for the buildings to be erected on the Esplanade des Invalides for the 1900 Exhibition. They consist of two large palaces, of symmetrical design, stretching from one end to the other of the Esplanade, and intended to be devoted to furniture and to "Industries diverses." By the side of these the new station of the "Ouest" Railway Company will appear as a low building with a series of arcades, stopped at each end by a pavilion with pilasters supporting a semicircular pediment. During the exhibition, however, this building will be almost entirely concealed by shrubberies.——M. Scellior de Gisors, the architect, is occupied with preparations for the inauguration of the two monuments to be shortly erected in the Luxembourg Garden, in memory of Sainte-Beuve and of Leconte de Lisle. The former, which will be inaugurated May, will be placed near the Pepinière, the latter near the Medici fountain.——M. Crank, the sculptor, has just completed the monument to Cardinal La Vigerie which is to be erected at Carthage, in the basilica of St. Louis. The Cardinal is represented half reclining on a sarcophagus, holding an inscribed roll in his hand. In front of the sarcophagus two monks of the order of the "Pères Blancs" are kneeling, and an Arab woman and child and a group of negro converts present palms to the Cardinal. The whole group is of a grand character.——A competition has been opened by the town of Aubervilliers for a group of buildings intended for a Salle des Fêtes, a public library, and the police and fire-brigade services. The intended outlay is 700,000 francs.——A large orphanage and an asylum for the aged are shortly to be built at Clichy.—— The Chamber of Deputies has had presented for its consideration a scheme for a canal from Courcelles to Paris.——The jury of the competition opened by the town of Murat (Cantal), for a group of schools and for new Law Courts, have awarded the first premium to M. Croizet, architect, of Aurillac; the second to M. Ravenel, of Saint-Flour, and the third to M. Noël, of Aurillac.—— At Douai an iron bridge has just been completed to unite the two portions of the Boulevard Pasteur. ——The jury in the competition at Fécamp for new schools have awarded the first premium to M. Morel, of Montdidier, and the second premium to M. Bourgeois, of Poissy.——Important works in architecture and street improvement are to be entered on at Lyons, at an estimated cost of more than seventeen million francs. Among these will be the restoration of the Hotel de Ville and the Palais des Arts, a new building for the Conservatoire of Music, a new gallery for picture exhibitions and for use as a concert hall, and various greenhouses and other erections in the Parc de la Tête d'Or.——The death is announced, at the age of 77, of M. François Eugène Dejean, architect, of Paris, one of the oldest members of the Société Centrale, and who in his will has left to the Société, in trust, legacies for various purposes to the Ecole des Beaux-Arts. In conformity with these legacies, the holder of the "Premier grand prix de Rome" will receive this year a sum of 5,000 francs, the holder of the "deuxième premier" 3,000 francs, and the eight other competitors 500 francs each.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Messrs. Winfields, Birmingham, have sold the lacquer and staining varnish department of their business to Messrs. Evans & Jackson, who will carry on this manufacture at their new premises at Cromwell Works, Barkerville-place, Broad-street, Birmingham. All the other manufactures of Winfields, Limited, will continue to be carried on at their old address, Cambridge-street Works, Birmingham.——Messrs. Higgs & Hill, builders, of Crown Works, South Lambeth-road, have converted their business into a private limited company. The business will be carried on under the same management as before.

WINDOW, CHURCH OF ST. JOHN THE BAPTIST, CARDIFF.—On Septuagesima Sunday a three-light window, from the studio of Messrs. Lavers & Westlake, was unveiled by the vicar at the Church of St. John the Baptist, Cardiff. It is the first of a series to be placed in the south aisle, in illustration of the life history of the patron saint. The church contains another window by the same firm, recently placed within it by Lord Bute.

HALIFAX BUILDING TRADES' EXCHANGE.—On the 11th inst. the inaugural dinner of the Halifax Building Trades' Exchange, which has already a membership of about 250, took place in the Mechanics' Hall. Councillor Naylor (President) occupied the chair. —Mr. George Charnock proposed the toast of "The Mayor and Corporation," and the Mayor, Councillor J. H. L. Baldwin, in response, congratulated those present on the result of the inception of the Halifax Building Trades' Exchange.—Mr. W. Oats proposed "The Town and Trade," and said that the prosperity of the building trades depended upon the success of the other trades of the town. It was a pity that they could not avoid such sad occurrences as the recent engineers' strike. Another strike which would affect the building trades still more was threatened by the masons.—Alderman Gaukroger, in reply, spoke of the recent development of Halifax, and informed his hearers that the Improvement Committee had that day purchased land in a certain portion of the town which would materially help its development in the centre. For over twenty-five years he had been connected with the building trades as a brickmaker, and was delighted that all the firms had been amalgamated into one Halifax Brick Company, with the result of increased prosperity.—Mr. Ellis Robinson, President of the City of Bradford Building Trades' and Stone Exchange, gave "The Halifax Building Trades' Exchange," and Councillor Naylor acknowledged the toast. He said he was strongly in favour of building a place where they could meet, and, if each member took up a 10*l.* share, they would have a nucleus for erecting the building, which need not cost more than 5,000*l.* They had decided upon making Wednesday their market-day with a view to forwarding the movement in that direction.—Councillor Dodd next submitted "Kindred Exchanges," and said that the Halifax builders had every right to form such an association. But their exchange had not been inaugurated (as some seemed to suppose) to bind down their workmen to certain conditions and wages, but to encourage them. As a matter of fact, the building trades paid the highest rates of wages in any particular branch of business, and they wished now to be able to transact their business in a proper and upright way. But their exchange should be a club as well, and he hoped that it would progress.—Visiting Presidents replied.

ELECTRIC INSTALLATION AT DOWNS HOUSE, WANTAGE.—This house, the property of Lord Wantage, is to be supplied with a complete installation for electric lighting, comprising steam-engine, boiler, dynamo, storage batteries, switch-boards, mains, house wiring, and fittings. The wiring is all to be on the "Patent Twin System" of the National Electric Free Wiring Company, who are commissioned to carry out the work.

BRADFORD BUILDING TRADES AND STONE EXCHANGE.—A meeting of the members of the Bradford Building Trades and Stone Exchange was held on the 10th inst. in the large room of the Exchange. Mr. Ellis Robinson, President of the Exchange, was in the chair. The Chairman said that the members had reason to congratulate themselves on the success of the Exchange. Since its formation the membership had increased from 130 to 569. The shareholders had firmly resolved not to take more than a 5 per cent. dividend, and if there was any balance it would be applied as far as possible to the general benefit of the Exchange. Mr. Turner moved that the present committee and officials should continue to hold office until the expiration of the first year of the existence of the Exchange in July next. Mr J. Thomas seconded the resolution, and it was carried.

ABERDEEN CONTRACTORS AND THE SCHOOL BOARD.—The contractors for the erection of the proposed school at Westfield held a meeting on the 9th inst., at which it was resolved to immediately raise an action for damages against the Aberdeen School Board for breach of contract. The sums claimed for amount in all to about 1,000*l.* The contractors taking action are Messrs. Pringle & Slessor, masons; Messrs. Watt & Clark, joiners; Mr. Stephen, plasterer; Mr. Thom, plumber; Mr. Lewis, slater; and Mr. Grant, blacksmith. These firms comprise the contractors whose offers were accepted by the School Board, with the exception of the firm of Messrs. James Garvie & Sons, painters, who are not associated in the case. Besides suing for breach of contract, one or two of the firms are to lodge claims in respect of work already done.—*Aberdeen Free Press.*

REREDOS, WARHAM ALL SAINTS, NORFOLK.—A reredos has just been placed in the Church of Warham All Saints. The architect was Mr. John Arthur Reeve, of Westminster, and the sculptors were Messrs. Thomas & E. W. Nicholls, of Lambeth.

BATH MASTER BUILDERS' ASSOCIATION.—The annual dinner of this Association was held on the 8th inst., at Fortt's Restaurant, under the presidency of Mr. Geo. J. Long. The toast of the "National Association of Master Builders of Great Britain and the Federation of the West of England and South Wales" was given by Mr. G. Parrin, of Bristol, who referred to the advantages derived from federation among the master engineers, and also by the timber merchants of the Bristol Channel. Mr. A. Krauss, of Bristol, responded, and said the federation had done a great deal of good, and he hoped through the loyalty of the members it would prove of benefit with regard to the dispute with masons now occurring at Cardiff. Mr. E. W. Wood proposed the "Architects and Surveyors," and Messrs. T. B. Silcock and H. W. Matthews responded. Mr. F. N. Cowlin, of Bristol, proposed "The Bath Master Builders' Association," and the President replied. Mr. W. Dyer, of the Weston-super-Mare Association, responded to the toast of "Kindred Associations."

MEMORIAL PULPIT, NOEL PARK. — The new pulpit erected to the memory of the late Bishop of Wakefield in the Church of St. Mark, Noel Park (the Shropshire Mission), was dedicated on the 5th inst. The pulpit was designed by Mr. Rowland Plumbe, and erected by Messrs. Jones & Willis. It is of Caen stone; the panels are divided by arches supported on dark marble shafts. Under one of the arches is a figure of St. Mark, and it is proposed to fill the other spaces with figures of St. Chad and Bishop How when funds permit.

WOODWORKING MACHINERY.—A special number of *Timber* for February, is devoted largely to a review of what has been done in woodworking machinery during the past year, with a great number of illustrations.

THE CITY ARCHITECTSHIP, ABERDEEN.—Aberdeen Town Council resolved on the 7th inst. not to make any alteration in the present arrangement under which Mr. John Rust was appointed City Architect five years ago. Mr. Rust carries on a private practice, and the minority were in favour of having the duties of the City Architect discharged in the Burgh Surveyor's department, and of appointing a Master of Works who would look after the town's property and prepare sketch plans when required by the Town Council.

THE PROPOSED SALE OF THE CRYSTAL PALACE.—It has been stated in the daily papers that the directors of the Crystal Palace Company have had under consideration for some time past proposals from an influential quarter for the purchase of the Crystal Palace and Grounds. The negotiations have now reached a point at which the shareholders of the Crystal Palace and the public at large are likely, before long, it is said, to be made acquainted with the full details of the scheme. The schools of engineering, art, and music will be maintained, and the

facilities of tuition they have afforded be extended. One of the causes which have militated against the financial success of the Palace has been the inadequacy of the railway facilities. It is an essential part of the new scheme that great improvements will be made in this respect. The announcement appears to be rather vague, but we hope it is true.

SHOREDITCH ELECTRIC LIGHT AND DUST DESTRUCTOR UNDERTAKING.—At a meeting of the Shoreditch Vestry recently, Mr. H. E. Kershaw, Chairman of the Electric Light Committee, said that owing to the unprecedented success of the Vestry's efforts in the combined scheme for the generation of electricity from the steam supplied by the dust destructor, the Committee recommended the Vestry to reduce the charge for electricity from 6d. per unit for the first two hours and 4d. per unit for the surplus to 6d. per unit for the first hour and a half and 2d. per unit afterwards. This would work out to consumers of electricity using the light for three hours per day at 4d. per unit; four hours per day, 3½d. per unit; six hours per day, 3d.; and so on, reducing the cost in proportion to the number of hours the light was in use. After existing for six months only, they were supplying electricity, within a little, as cheaply as any municipal installation in the country. During the past quarter they had sold 95,000 units of electricity, and the engineer's estimate for the current quarter was 150,000 units.

THE COST OF BUILDING.—On the 31st ult. Mr. George Eadie, builder, lectured under the auspices of the architectural section of the Glasgow Philosophical Society. The lecturer, who took for his subject "The Cost of Building Forty Years Ago and Now," compared the cost of erecting a four-story tenement (having a frontage of 356 ft.), consisting of three houses on a stairhead, two consisting of a room and kitchen, and one of a single apartment. In 1857 the mason and brick work of such a tenement cost 953*l.* 9s. 4d., while now the cost would be 1,310*l.* 7s. 10d. The wright work cost then 826*l.* 17s. 6d. for such a building; now it cost 868*l.* 6s. The slater work then cost 38*l.* 16s. 2d., against 49*l.* 7s. 8d. now; plumber work then cost 41*l.* 19s., against 117*l.* 12s. 8d. now; plaster work then cost 168*l.* 10s., against 240*l.* 12s. 10d. now; painting and paperhanging then cost 70*l.*, against 85*l.* now; other tradesmen's work amounted to 74*l.* then, as against 80*l.* now. The total expense of erecting such a building in 1857 was 2,273*l.* 18s., while a building of the same class to-day cost 2,751*l.* 7s., an increase of 21 per cent. Wages had doubled within forty years, and he reckoned that workmen's wages showed a total increase of 80 per cent. Materials had risen in cost 58 per cent. A house rented at 8*l.* 15s. forty years ago would now bring 10*l.* 15s.; a two-room-and-kitchen house costing then 15*l.* would now bring 22*l.*; and a three-room-and-kitchen house costing then 24*l.* would now bring 28*l.* He attributed the increase to the building regulations now in force and to the greater conveniences and ornamentation in present-day houses. He held that rents were very much less to-day than they ought to be, and that was due to interest being cheaper now than it was forty years ago.—*Glasgow Evening Times.*

IRISH SHRINES.—A lecture on Irish shrines was given recently in the Science and Art Museum, Dublin, by Mr. George Coffey, the Curator of the collection of Irish antiquities. Mr. Coffey, in introducing the subject, explained that while Irish history—as it appeared in contemporary records—appeared to consist mainly of wars and rumours of wars, the examples of Celtic art which have been handed down to us prove that there must have been in the country an ordered civilisation persisting throughout many centuries; and that so far from confusion being the prevailing condition, an environment must have existed which was eminently suited for the production of fine works of art. The pre-Christian Celtic artists and craftsmen made very great use of what is known as the "Trumpet Decoration"; this was composed of interwoven spiral ornament combined with almond-shaped decoration. In the course of time this spiral decoration gave way to what is known as interlaced, or ribbon work decoration, into which grotesque figures of animals were frequentiy introduced. The shrines in the collection of Irish antiquities were then dealt with in detail by the lecturer. Most of these belong to the eleventh and twelfth century, but one—the shrine of St. Molaise—is assigned to a considerably earlier period. The Irish inscriptions on the shrines are usually found to consist of prayers for the prince or king under whose direction the work was accomplished, the artificers engaged in the work, and the "keeper" of the shrine. It was explained by the lecturer that these shrines were usually entrusted to the care of some family, and passed on from father to son. The history of all the shrines in the Irish collection is well known, and the links which bind these beautiful art objects to the historic past of our country are perfectly clear. In most cases they came from the family of the "keeper of the shrine" into the possession of some antiquarian, and were then presented to, or purchased by, the Royal Irish Academy. In conclusion, Mr. Coffey said that he hoped all those present would be led to take a real interest in the beautiful Irish decorative work, of which so many fine specimens were to be seen in the museum—one of these, the Tara brooch, being the finest piece of work of its kind in the world; and he also advised all Irish artists who wish to "revive" Celtic art to endeavour to get inside the spirit of the time in which it was produced, and not to be content with mere imitation, which could never lead to the production of really good work.—*Freeman's Journal.*

ELECTRIC LIGHTING IN LIVERPOOL.—A meeting of the Lighting Committee of the Corporation was held on the 4th inst., in the Municipal Offices, Dale-street, when the electrical engineer was empowered to proceed with a portion of the extension of the mains provided for by the estimate for the current year. The work in question embraces a trunk main from Paradise-street viâ Hanover-street to Ranelagh-street mains, dealing with the residential districts of Wavertree, Smithdown-road, Allerton-road, and Green-lane, a main to join the Mossley Hill district by Penny-lane and Sefton Park district viâ Greenbank-drive, mains in Wavertree-road, Tunnel-road, Lodge-lane, and Bentley-road, joining to Lark-lane Station; and mains in Byrom-street and Scotland-place connecting with mains already laid. The estimated cost of this work is 16,947*l.*

EXCAVATIONS AT CARDIFF CASTLE.—Excavations are now taking place in the knoll that forms the north-eastern extremity of the castle walls. For many centuries the trees have grown unmolested upon this spot, but within the past few weeks six or eight of the largest of them have been cut down. Their removal has been necessitated by the excavations which are taking place. It is common knowledge that the Marquis of Bute has for some time past been reconstructing the old castle wall from a point at the rear of Duke-street for a distance of a hundred yards parallel with the North-road. The wall has now been erected to within thirty yards of the corner, at which it will meet the other and older wall at right angles. In all probability a large tower will be erected at the N.E. angle at which the walls will meet. For centuries the earth at this corner has sloped upward from the canal bank to a height of about 30 ft. What formerly existed at that corner has never been known, but the excavations of the past few days have brought to light the fact that in the very heart of the huge earthwork there has laid buried for many centuries what appears to be the rubble foundation of an angle tower of undoubted Roman origin. An examination of the excavation, as at present made, shows that at the left-hand side of the mass of masonry now laid bare may be seen portions of the old ashlar facing of the tower. The mass of rubble behind this clearly displays the method of building resorted to by the Romans in erecting walls of great thickness and strength.—*South Wales Daily News.*

NEWCASTLE SOCIETY OF ANTIQUARIES.—The eighty-fifth anniversary meeting of the Newcastle Society of Antiquaries was held at the Castle on the 26th ult., Mr. Cadwallader Bates presiding, in the absence of the President, Lord Ravensworth. The annual report stated that, though very inadequately supported by the Northumbrian public, the Northumberland Excavation Committee continued its operations last year, and had achieved some interesting results. The Roman camp of Aesica (Great Chesters) has again been the scene of the excavators labours. A large building outside of the camp on the south-east has been excavated, and reveals several chambers, some of them furnished with hypocausts; this was probably the home of one of the officers of the garrison with his family, or, from the size of the building, we may conjecture that more than one distinguished family has here taken up its quarters. Excavations have also been made in the centre of the camp, which have at last brought to light some inscribed stones. Three fine examples have been discovered. Other Roman inscriptions recently discovered include the slab at Chesters recording the supply of water to Cilurnum while Ulpius Marcellus was governor of Britain, and whilst the second cohort of Asturians was in garrison, and an altar at South Shields, naming Julius Verax, a centurion of the sixth legion. The eastern portion of the late sixteenth century pele of Doddington, the most prominent object in the village, and a picturesque building, and "one of the most charming remains of Border architecture," fell down during a storm in the early part of the year; the remaining portion is in danger of sharing the same fate. It has been asserted that there is neither written history nor tradition about the tower, but, as has been truly said, its history "was clearly written on its walls." In 1584 Sir Thomas Grey was obliged to build a strong house of this description for the protection of his tenants at Doddington, but art and industry had so decayed on the Border that he was unable to build it of better masonry. It is of great importance to keep up this unique building now that its counterpart at Kilham is gone. The members of the Armourers Company have granted a repairing lease of the Herber Tower to the Corporation of Newcastle for a long term, so that this interesting and valuable building, the most complete of the few wall towers remaining, is now saved from destruction.—It was agreed to promote an exhibition of old silver secular plate in private possession in the Northern counties.—*Newcastle Leader.*

CAPITAL AND LABOUR.

RUGBY CARPENTERS AND JOINERS AND THEIR WAGES.—In January last the carpenters and joiners of the town unanimously decided to ask the masters to raise the standard rate of wages from 7½d. to 8d. per hour, to provide lock-up places for the safe keeping of tools on all buildings in course of erection, and that they should have payment for overtime at the rate of time and a quarter after ten hours' work, instead of after eleven as hitherto. The masters have decided to increase the rate of wages and provide the lock-up places, but they decline to accede to the request of the men as to overtime, and at a meeting of the men it was unanimously decided to accept the master's terms. The arrangement affects nineteen employers and some 200 workmen, and will come into force on March 31.—*Rugby Advertiser*

CARDIFF MASONS' STRIKE.—Masters and men in the building trade of Cardiff met in conference on the 9th inst., the former at the Royal Hotel and the latter in the Gladstone-hall. Earlier in the day a joint conference was held, between the representatives of both sides, lasting from eleven till one and from two till 3.30, but no decision was arrived at. The representatives from both sides submitted the proposals to a general meeting in the evening, and the masters' association confirmed the proposals made by their representatives. The employers' meeting closed at ten o'clock. The men's meeting was more protracted, and it was adjourned.

LEGAL.

MASON & CO. *V.* WOODTHORPE.

AT the Guildhall a few days ago, before Mr. Alderman Truscott, Mr. Edmund Woodthorpe, District Surveyor of the northern division of the City, appeared to a summons at the instance of Messrs. Mason & Co., of the Barbican, the building owners of certain work to be done on the premises at 19, Australian-avenue and 1, Cotton-street, who were stated to be dissatisfied with his decision as to certain work to be done upon the premises, which was alleged to be in contravention of the London Building Act, 1894. Mr. J. R. Atkin appeared for the appellants, and Mr. Woodthorpe conducted his own case.

Mr. Atkin said that Messrs. J. B. Coates (the Central Agency) were the occupiers of the basement and the first and second floors of 1 and 3, Cotton-street, and as the business expanded they wanted to take the ground floor of No. 18, Australian-avenue, and in order to do so, though these were originally separate buildings, they were desirous of having only one ground floor. To this Mr. Woodthorpe had given notice of objection, arguing that the place was only fit for one occupation. Now, the only object of this particular section of the Act was protection against fire. He submitted that the taking of a room at 18, Australian-avenue would in no way increase the danger in case of fire, and the premises were adapted for one occupation, thus meeting the construction of the Act.

Mr. Flint, A.R.I.B.A., was called, and said these premises could be made to connect, and were adapted for one occupation. The risk by fire would be no greater with the iron door it was proposed to place in the room.

Mr. Woodthorpe held to his original notice.

The Alderman remarked that he had paid great attention to this matter. He had visited the premises, and had left nothing undone that would assist him in arriving at a right decision. He came to the conclusion that he must uphold the notice of the District Surveyor, but did so with considerable regret. He would be glad to state a case on the point, as the Building Act seemed to him a difficult problem.—*Times.*

THE CLAIM AGAINST THE ST. PANCRAS GUARDIANS:

THE DAMAGES ASSESSED.

THE case of Drew-Bear and others *v.* The Guardians of the Poor of St. Pancras came before Mr. Justice Ridley, in the Queen's Bench Division, on the 10th inst., for judgment as to the damages to be paid by the defendants to the plaintiffs in respect of the breaches of contract found by the Court of Appeal in connexion with the building of the St. Pancras Workhouse. The history of the case has been fully reported in former issues (see the *Builder* for November 21 and 28 and December 5, 1896; January 23 and 30, March 6 and 13, April 17, May 22, and November 6, 1897; and January 15, 1898).

Mr. R. M. Bray, Q.C., and Mr. A. A. Hudson appeared as counsel for the plaintiffs; and Mr. English Harrison, Q.C., and Mr. Wm. Moyses for the defendants.

Mr. Justice Ridley, in giving judgment, said the case was one in which he had to assess the damages to which he might think the plaintiffs entitled according to the judgment of the Court of Appeal. As he understood it, the judgment of the Court of Appeal laid down that the plaintiffs were entitled to damages by reason of the contractor not having been allowed to get possession of the site in question, but that they were not entitled to anything in respect to the acts of the architects; therefore it was not a case in which it could be said that the whole of the contract was at an end, and the plaintiffs were entitled to *quantum meruit*, but the amount of damages they were entitled to must be ascertained in respect of such injuries as resulted to the contractor in not having possession of the site given to him by the Guardians. The evidence which

had been called before him (his Lordship) on the different heads of damage was of a general character, the witnesses examined before him speaking in their experience as surveyors and builders, and giving their opinion as to what percentage a builder would find his cost increased if he did not get posssesion of the site. That, he thought, appealed to anyone's sense. If a contractor had four or five blocks of buildings to be erected anybody could see in a moment it was of the greatest consequence that the whole site should be clear so that the builder could map out his work and get it pushed forward so that each part helped the other. If the contractor was obliged to build one portion at a time the work became dislocated, and the more buildings he had to put up the worse it was. That was the nature of the present case as it seemed to his lordship. It was, indeed, some time before he personally arrived at the conclusion that it was of so much importance in the case. No doubt interference by the architect did cause delay to some extent, but he thought that the real cause of the mischief which upset the calculations of the contractor, and the expectation of the Guardians as to the completion of the work, was mainly due to the fact that possession was not given of the site. That was the way the contract was broken. On the other hand, it must not be forgotten that on the previous occasion it was the plaintiffs who contended, for the most part during the inquiry, that the architect was the person who had prevented the job being carried out, and certainly he did interfere far more than usual in respect to materials brought on the job and to work done on the job. In the second inquiry, as to the damages, the case was reversed because the plaintiffs, who formerly contended that by reason of that interference the job was prevented from being carried out, said that the real cause of the injury was not getting possession of the site. The truth of it was, that although there was some delay caused through the interference of the architect, one's sense told one that the real cause of the delay was not getting possession of the site. It was very unfortunate that this was not done. It was now necessary to deal with the different heads of damage put forward. He did not mean to go through the whole history of the case again. He had considered the matter as well as he was able on the materials before him. The first head of damage claimed was in respect to the increased cost of the labour by reason of the delay in getting possession of the site. The witnesses called by the plaintiffs had calculated this at the large sum of 6,357*l.* That was established by a strong body of evidence as the ratio or proportion which, in the trade, would be attributed to the failure of getting possession of the site. On the other side there was no evidence whatever of any account. There was no contradiction of it, and nobody called or put forward to say it was not so. The position the defendants took was, that it was not right, according to the judgment of the Court of Appeal, that this should be taken into consideration, but he (his Lordship) thought it was. He thought that, dealing with such a case as the present, he ought to be guided by the opinion of those who understood the trade. He thought it was within the decision of the Court of Appeal that he should assess the damages to the best of his ability on the materials put before him. The percentage given by Mr. Chappell and other witnesses was not contradicted. He did not mean to say he was prepared to accept it to its full extent. He did not think that the interference upon the roads by the traffic of the Guardians was made out by the plaintiffs. What he had been able to arrive at on this head was, that in place of the 6,357*l.* claimed, the plaintiffs were entitled to 4,000*l.* Then there was the claim for increased price of labour, from and after September 1, 1893. That he had included in the sum of 4,000*l.*, and he added nothing for that. In the same way as to the profit of 10 per cent., that also was included in the sum of 4,000*l.* As to the claim from interference by sub-contractors, he thought, looking at the evidence given, it was exaggerated, and the sum of 250*l.* was as much as the plaintiffs were entitled to in respect to that matter. Then on the claim as to the increased price of materials from September, 1893, although somewhat in dispute, he thought, on the whole, that the prices of materials were raised a good deal then. He could not, however, put the loss on that head as high as the plaintiffs had done. He thought they ought to have 500*l.* for that. As to the claim for establishment charges, &c., he allowed 1,250*l.* The charges as to loss of profit and failure to get possession of the capital outstanding he put together and allowed 1,000*l.* upon those heads of claim. The total of all these sums was 7,000*l.*

Mr. Bray: Your lordship will give us judgment for this amount with costs?

His Lordship: Yes, I think the damages ought to be assessed at 7,000*l.*

Mr. Bray: The amount paid into Court by the defendants was 2,500*l.*, so, therefore, I am entitled to costs.

His Lordship: I think you are entitled to the costs of this hearing. The Court of Appeal has dealt with the other costs.

Mr. English Harrison: Then, technically, judgment will be for 4,500*l.* in addition to the sum paid into Court?

His Lordship: Yes.

Mr. English Harrison: Will your lordship allow me a stay of execution for about three weeks to consider the effect of your lordship's judgment? The money is absolutely safe.

Mr. Bray: Have we not had enough of this?

His Lordship: I think so. I will not stay anybody's execution in this case. I do not wish to stop people taking appeals, but has there not been enough litigation? This is the best I can do for you.

Mr. English Harrison: I would like a stay for three weeks if your lordship pleases. I do not think it is unreasonable under the circumstances. Does your lordship refuse it or not, because I would rather have it in a proper form and then we know where we are.

His Lordship: Stay of execution for a fortnight. The plaintiffs will be entitled to the 2,500*l.* in Court in part satisfaction of their judgment.

AN OFFENDING SUMMER-HOUSE AT FOWEY.

THE case of Purcell *v.* Chinnock came before Mr. Justice Kekewich in the Chancery Division, on the 11th inst., on a motion by the plaintiff for an *interim* injunction to restrain the defendant from permitting to remain erected, and for a mandatory order to pull down, a certain building on a plot of land situate on the Esplanade at Fowey, in the county of Cornwall. It appeared from the statement of Mr. Warrington, Q.C., who appeared in support of the motion, that the plaintiff and defendant were neighbours in Florence Villas, Fowey, and in front of those villas there was a narrow strip of garden where the defendant (who was the joint tenant with the plaintiff under a lease) had erected a summer-house which, it was alleged, obstructed the plaintiff's view of the harbour.

In the result, his Lordship refused to make any order on the motion, except that the costs should be costs in the action.

IMPORTANT ACTION AGAINST A GAS COMPANY AND CONTRACTORS.

THE case of Jordeson *v.* the Sutton Southcoates and Drypool Gas Company and others was an action which has occupied the attention of Mr. Justice North in the Chancery Division for several days, it being an action brought by the plaintiff with respect of injury to some small houses belonging to him during the construction of a large gasholder close to such houses, and of prospective obstruction of access of light to the windows of such houses. Although the houses were of a poor class, being let to weekly tenants, the case raised important points of law as to the right of a person to abstract water, or water and silt, by works on his own land from a substratum of his neighbour's land and so let down the surface to the injury of buildings thereon. The material facts were as follows:—The plaintiff is the owner of some twenty-four cottages in Hull which adjoined the premises of the defendant company. In July, 1896, the gas company, through their contractors, Messrs. Holme & King (also defendants), began to excavate for the purpose of constructing a sunk gasholder tank in which to receive and seal with water a very large telescopic gasholder, intended to rise when fully inflated to over 100 ft. above the ground level. The circular trench which the contractors made to build the enclosing well of the tank was only a few feet from the back wall of the nearest cottage. The trench was carried down to a depth of about 30 ft., and the work had to be carried through a variety of strata, one of which, called silt, was very difficult to deal with. This stratum, about 6 ft. 6 in. thick, was immediately followed by a thinnish layer of soft clay, and below that there was a firm basis of impermeable gault clay. The plaintiff's case was that cracks on his land and in his cottages had occurred through subsidence caused by the withdrawal of water and sand in suspension from the running silt bed; he further alleged that the contractors had not adopted the best known methods of damming back the water and silt during the operation of constructing the tank, and therefore they had been guilty of negligence. On this part of the case his lordship heard a mass of contradictory expert evidence as to what the best mode of making an effectual dam was. Another question between the parties was whether, on the construction of the company's special Acts, coupled with the incorporated Gas Clauses Acts, the case was within the decision of "The Metropolitan Asylums Board *v.* Hill," in which the House of Lords held that the plaintiffs could be restrained from erecting a small-pox hospital on land bought for the purpose in a residential neighbourhood; or a later decision of the House of Lords in the case of "The London and Brighton Railway Company *v.* Truman," in which it was decided that the railway company were entitled to use land bought under power to purchase additional land by voluntary agreement for cattle sidings and yards to the annoyance of the inhabitants of a residential district at Croydon. The defendants in the present case contended that they had a common law right to remove water even if in doing so they abstracted matter in solution, and that any damage caused to neighbouring property was not actionable. Another contention was that the subsidence which took place was due entirely to the abstraction of water alone, and that no appreciable subsoil had been abstracted. The defendant company also contended that they were given powers for public purposes, coupled with a duty to supply gas, which could only be fulfilled by the construction of the gasholder in question, and that, apart from the question of negligence in doing the work, they were entitled to interfere, to the extent they had done, and proposed to interfere, with the rights the plaintiff would otherwise have had.

Mr. W. H. Upjohn, Q.C., and Mr. Dighton Pollock were counsel for the plaintiff; Mr. Haldane, Q.C., the Hon. C. Macnaghten, Q.C., and Mr. Boome for the Gas Company; and Mr. Rawlins, Q.C., and Mr. Heckscher for Messrs. Holme & King, the contractors.

Mr. Justice North, on the 15th inst., the arguments of counsel having concluded, said there were certain points in the case upon which he proposed to reserve his judgment, as they were questions of law. There were, however, questions of fact which had been gone into at great length, and which had better be disposed of while they were fresh in his memory. The first was as to the question of light. He had not the least doubt whatever that there would be a very considerable interference with the light of the plaintiff's cottages if the gasometer were carried to its full height. If he found in favour of the defendants on the whole case, he should deduct from their costs any costs raised on the issue of light, because they had failed on this point. The other question of fact had reference to the subsidence, and on this point he found that the defendants' work had been carried out carefully and skilfully; that there was no negligence, and that the plan adopted was the best.

Judgment was therefore reserved on the questions of law only.

LETTING UNCERTIFIED BUILDINGS.

AT the Second Court of the Sheffield City Police on the 8th inst., before Mr. W. Chesterton and Alderman W. R. Carter, Mr. T. H. Cuckson, builder, 148, Bradley-street, was summoned for allowing two houses, Nos. 87 and 89, Eldon-street, to be occupied before obtaining certificates of fitness from the City Surveyor. Mr. W. S. Collingwood, of the Town Clerk's Department, who prosecuted, said the proceedings were taken under Section 74 of the Sheffield Corporation Act of 1890, and charged defendant with having allowed two houses to be occupied without having obtained the certificates of fitness. Mr. Cuckson knew the building regulations very well. The majority of the builders gave the City Surveyor no difficulty, but some gave a great deal of trouble. The custom was, when a building was completed for the builder to send a notice to the City Surveyor, who inspected the building within fourteen days. If anything was found wrong the inspector pointed it out, and until the matters were put right he withheld the certificate of fitness. Mr. Cuckson gave notice to the City Surveyor's Department with regard to these two houses, and they were inspected on December 6. The inspector found that there was no proper water supply, and the drains were not connected with the sewer. He pointed these things out, and when he went afterwards he found that one of the houses was occupied.—Mr. A. J. Dickinson, building inspector, said when he inspected the houses the water supply was not laid on, and the drains were not connected with the sewer. When he inspected them on December 14 he found that they were just making the connexion with the sewer, and the men from the water department were just putting the water in. The water installation was not completed until December 20, whilst two of the houses were occupied. Defendant said he gave the people the keys in order to let them clean the houses, and they got their furniture into the houses without his consent.—The Chairman said defendant was a professional builder, and should have known better. He would be fined 1*l.* and costs in each case.

MEETINGS.

FRIDAY, FEBRUARY 18.

Incorporated Association of Municipal and County Engineers.—Metropolitan District meeting, to be held at the Offices of the Institution of Civil Engineers, Westminster. 7.30 p.m.

SATURDAY, FEBRUARY 19.

Sanitary Inspectors' Association.—Annual Dinner, King's Hall, Holborn Restaurant. 6.30 p.m.

Architectural Association of Ireland.—Special Visit to the Science and Art Museum, Kildare-street. 2.30 p.m.

MONDAY, FEBRUARY 21.

Royal Institute of British Architects. — Mr. J. Tavenor Perry on "The Mediæval Campanile at Rome." 8 p.m.

Surveyors' Institution.—Mr. T. W. Wheeler, Q.C., on "Legal Liability for Professional Opinion." 8 p.m.

Carpenters' Hall, London-wall (*Free Lectures on Matters connected with Building*).—Professor Silvanus P. Thompson on "Electric Motive Power," with experiments. 8 p.m.

Society of Arts (*Cantor Lectures*).—Mr. Hugh Stannus on "The Principles of Design in Form." II. 8 p.m.

Sanitary Institute.—Dr. Louis Parkes on "Blots in our System of Sanitary Administration: Why Epidemics occur." 8 p.m. The Lecture is an Introduction to the twenty-fifth Course of Lectures and Practical Demonstrations in Sanitary Science for Sanitary Officers and Students.

Liverpool Architectural Society. — Paper by Mr. F. E. P. Edwards, entitled "Notes on St. George's Hall," with limelight illustrations. 6 p.m.

TUESDAY, FEBRUARY 22.

Institution of Civil Engineers.—(1) Mr. Llewelyn B. Atkinson on "The Theory, Design, and Practical Working of Alternate-Current Motors;" (2) Mr. H. F. Parshall on "Dublin Electric Tramway." 8 p.m.

Society of Arts (Applied Art Section).—Mr. Cyril Davenport on "The Regalia of England." 8 p.m.

Auctioneers' Institute.—Mr. W. Roland Peck on "Furniture: Past and Present." 8 p.m.

Royal Victoria Hall, Waterloo-road, S.E.—Miss Routledge on "Old London." 8.30 p.m.

Leeds and Yorkshire Architectural Society.—Discussion evening. 7.30 p.m.

Architectural Association of Ireland.—Mr. Cecil Orr on "The History of Architecture." II. 8 p.m.

WEDNESDAY, FEBRUARY 23.

Architectural Association: Discussion Section.—Mr. P. L. Marks on "Correct Principles of House Planning."

THURSDAY, FEBRUARY 24.

Society for the Encouragement of the Fine Arts.—Mr. F. H. Evans on "Wells Cathedral." Limelight illustrations. 8 p.m.

Society of Antiquaries.—8.30 p.m.

Royal Institution.—Dr. Jean Paul Richter on "Some Italian Pictures at the National Gallery." III. 3 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Dr. H. Manley on "Sanitary Law: English, Scotch, and Irish; General Enactments Public Health Act, 1875; Model By-Laws, &c." 8 p.m.

Institution of Electrical Engineers.—Mr. G. Binswanger Byng on "The Manufacture of Lamps and other Apparatus for 200-volts Circuits." 8 p.m.

Northern Architectural Association (The Students' Sketching Club).—Annual Social Gathering: the Grand Assembly Rooms, Barras Bridge. The prize drawings from the Institute will be on view, also other drawings. The President, Mr. Frank W. Rich, will open the proceedings at 8 p.m.

FRIDAY, FEBRUARY 25.

Architectural Association.—Mr. F. W. Troup on "Leadwork, Plain and Decorative" (with practical demonstrations). 7.30 p.m.

Royal Institution.—Captain Abney on "The Scientific Principles of Modern Colour Photography." 9 p.m.

Institution of Civil Engineers (Students' Meeting).—Mr. C. E. Wolff on "The Problem of Train Resistance." 8 p.m.

SATURDAY, FEBRUARY 26.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at the Aylesbury Dairy Company's premises, Bayswater. 3 p.m.

Builders' Foremen and Clerks of Works Institution.—Annual Dinner, King's Hall, Holborn Restaurant. 6 p.m.

RECENT PATENTS:

ABSTRACTS OF ACCEPTED SPECIFICATIONS.

Open to opposition until March 26.

[1896] 29,212.—CEMENT: *Petrifite, Limited.*—Magnesium chloride (about 30 per cent. by weight) is boiled with a little water for about nine hours. After it is cool, the mass is finely ground, and with the powder are mixed finely-powdered magnesia (about 60 per cent. by weight) and a powdered lead salt—say, lead acetate (about 5 per cent. by weight).

[1897] 1,819.—TRACING-LINEN, OR CLOTH, &c.: *Sackville & Swallow.*—The fabric is passed around a rubber or similar covered "bowl," applying the size, colour, or other fluid matter by an engraved roller, pressing the size or colour into the fabric by a thin plate, and passing it on to the drying cylinder—thus the usual "lapping," "blanketing," and "backgreys" are dispensed with, being replaced with a "pad" roller, a cylinder or "bowl," and a "doctor" or scraper, which presses the colour or size into the pores of the fabric as it comes from between the cylinder and "pad" roller.

2,036.—SUPPORT FOR HANGING GAS LAMPS OR LIGHTS: *W. J. Chesterton.*—An indiarubber or flexible tube of limited tension passes down from the ceiling fitting and under the pulley of a counter-weight and over another pulley; the lamp is counter-balanced by the weight, and can be moved up and down and swung round.

3,392A.—TUBE OR ROD AND SOCKET JOINT: *Bott & Morrison.*—The tube or rod has portions of rings or threads or grooves upon or round its end, and the socket is fashioned likewise: the joint is locked by one turn, the grooves are then filled with solder or amalgam. The inventors compare their contrivance with the breech-block of an Armstrong breech-loading gun, and with the grooves in a screw tap or die.

3,684.—SUPPORT AND GUIDE FOR SLIDING DOORS: *M. H. Spear.*—A combined frame or guide for one edge of the same, and pivoted cross-bars attached respectively to the back of the door and to a fixed point, and having curved edges or slots that engage with pins carried by the door and a fixed part respectively, also giving the door a slight rise when being moved.

3,724.—STEAM-BOILER FURNACES: *W. Brothers.*—The furnace has interior chambers for fuel, provided with outlet openings through which the products of combustion pass to an air chamber, above or around the furnace chambers, provided with air inlet openings fitted with valves or shutters. The invention includes a combustion chamber, wherein secondary or more complete combustion takes place, put between the air chamber and the flue.

4,438.—COCKS AND TAPS: *S. E. Ericson.*—For enabling the repair of a valve without shutting off the water supply, a second and auxiliary valve is fitted in the same casing as that of the ordinary valve, the former to close itself only when the latter is wholly open or removed for repair, or to be independently operated.

4,679.—WINDOW BLIND FITTINGS: *C. Leigh.*—In the sides of the window frame are grooves, or channelled brackets, for receiving the top rail of a Venetian blind, or the top bar may have hooks to hang on to eyes in the window frame.

5,804.—CHIMNEY COWL: *W. H. Boatwright.*—The combination with a tubular body, and a spindle extending therefrom, of a conical cap supported by pivots upon the spindle above the upper or outer end of the body, the cap carries a non-metallic bearing for the spindle.

5,968.—FOR INDICATING OR DENOTING OCCUPIERS OF CHAMBERS, FLATS, &C.: *W. Hanemann.*—The contrivance consists of a box having horizontal openings equal in number to that of the floors, and a hand-rotating prism, behind each opening, which has as many faces as there are separate apartments on that floor—the tenants' names are placed upon the faces of the prism.

7,945.—LOCKS AND LATCHES: *H. D. Bailey.*—The handle's rotary movement is transmitted to a sliding bar by a lever which has two or more arms secured to the spindle. The bar is connected with the bolt either directly or through the medium of a coin inserted in the lock or latch.

13,591.—EMBOSSED RAISED PAPER FOR WALLS, &C.: *J. Holden & Co.*—For this is employed a certain sponge paper (Jackson's Patent, 2485—1888) which is joined with ordinary paper as it passes along the paper-making machine; the duplex material is then embossed with the pattern; the raised paper can be made with or without "scrim" or threads.

21,465.—LOCKS AND THE LIKE: *A. Stenström.*—The locks have two shanks, connected by pivots, to clasp or hold the lock mechanism, placed between the shanks, consisting of two or more springs projecting from one shank on the free end of which are clutches which, when the shanks are pressed together, can enter between the projections on the opposite shank; one of these by means of a bevel carries the clutches between and within the projections, and then gears with the clutches, so that the lock can be opened only by a key of form of the clutches.

25,279.—MOULDING BRICKS, TILES, &C.: *D. Black.*—The machine comprises a wheel rotating within a stationary casing, upon a horizontal stationary axle, and having moulds or pockets on its periphery, plungers on their bottoms give the desired pressure and eject the moulded articles by cams on the shaft. The tops of the moulds are formed by pallet or delivering boards fed into the moulds carried round by the wheel in contact with the casing; also the combination of a race or hopper from which the pallet boards are fed into the moulds; and the arrangement of a scraper or "doctor," adapted, during the mould-wheel's rotation, to be lowered into, or raised out of, the moulds or pockets by the action of projections in the wheel upon bell-crank levers.

27,037.—MOULDERS' PATTERNS: *C. Leuchter.*—On the inner side of a disc are points which engage in the wood of the pattern; a box, having points on its lower edge, is held fast in the pattern by a counter-disc, which also has points for penetrating the wood; also a releaseable handle, for use with the foregoing contrivance, having a holding-bolt with a wing-nut. The bolt engages in a hole in the box, held firmly in the pattern by the counter-disc.

29,275.—FENCE POSTS: *B. G. Bracey.*—A terra-cotta cylinder formed with radial ribs and with a central core is inserted into the soil; the fence post is a metallic plate bent at its centre to a right-angle, forming an angle-bar which fits into the cylinder's core and is held in position by the edges abutting against the sides of the opening.

29,909.—STONE-BREAKING AND ORE-CRUSHING MACHINE: *W. H. Baxter.*—The machine's crushing-jaw is actuated by a central rocking arm or lever, between toggles; the toggles are placed at a point above the axes on which the lever moves, from the back of the crushing-jaw, at a point below its connexion with the toggles, extends a rod connected to the lower end of a double-ended vertical lever pivoted to a beam fixed transversely to the framework of the machine; a second rod, jointed to the lower end of the rocking-lever, is adjustably connected with the double-ended lever's upper end; the two rods transmit the return motion to the crushing-jaw (or movable jaw-stock). The inventor points out that hitherto all the strain both before and during the pressure or thrust for the crushing operation has been on or below the centre or axis upon which the central rocking-lever works.

NEW APPLICATIONS.

For week ending February 5.

2,430, W. Bevan, a Window-wedge. 2,440, B. Wesselmann, Metal-shearing Machine. 2,444, Yeadons, Purification of Gas. 2,449, F. W. Hayward, Water-pipes. 2,460, J. Kempster, Gradiometer Hand-level. 2,471, C. F. Kite, Hot-air Ventilating Stoves. 2,475, C. P. Kinnell, a Sanitary Hospital Ventilating Radiator. 2,483, Shorey and Others, Glazine Enamel. 2,485, C. Oliver, Electric Arc Lamps. 2,490, J. T. Szék, Plastic Compositions for Tiles, Plates, and Blocks—for Walls, Floors, Ceilings, &c. 2,491, L. Silverman, Locks and Keys. 2,496, A. B. Verrier, Scavenging Apparatus. 2,505, R. Dahlmann, Automatic Wood Screw-cutting Machines. 2,524, W. Brookes, Combined Reversible Ratchet Braces and Spanners. 2,526, Bennett & Kosugi, Drawing Instruments. 2,527, W. C. Masser, a Dustless Cinder Sifter. 2,530, Thom & Anderson, Binding Rotary Grinding and Polishing Tools. 2,531, W. Curbstone, Glazing Bars. 2,541, W. C. Piper, a Power Mortising Machine. 2,548, Singer Manufacturing Company, Blade Grinders. 2,556, W. Buckley, Lathe Driving Gear. 2,558, W. Saint, Furnaces or Destructors. 2,566, Ball & Gowdy, Automatic Lathes. 2,567, Hammond & Flint, Solder and Flux for Aluminium. 2,569, Kathleen Vickers, Imitation Wood-panelling. 2,577, C. A. Bailey, Pipe-threading Implements. 2,578, W. A. La Fave, and 2623, Florence Carman, Disinfecting Apparatus. 2,586, W. Jones, a Combined Lamp-post and Hydrant. 2,587, H. Potten, a Fire Escape and Diving Ladder. 2,590, F. Birch, Folding Ladders. 2,594, V. Royle, Bevelling Machines. 2,605, J. W. Suetterle, Automatic Distributing Nozzles. 2,613, J. S. Williams, Devices for Washing, Cleaning or Dusting Windows, Ceilings, Chimneys, Floors, &c. 2,634, G. Heath, Railway Platform and other Lamps. 2,647, Swinburns, and 2,699, H. Kamp, Cocks, Taps, and Valves. 2,648, C. B. Horrell, for Coupling Metallic Tubes or Rods. 2,653, J. Oglethorpe, a Combined Safety Hook and Rope Shackle. 2,680, E. Dresen, a Portable and Inodorous Water-closet. 2,697, H. Beach, Oil Cans. 2,707, Loevenich and Others, Water-wheels. 2,711, Devaun & Arnold, Combination Tools. 2,713, J. Reid, 2,889, C. Swinden, and 3,006, H. Lane, Brushes. 2,719, L. Delaunay-Belleville, Pumping Apparatus and Compressors. 2,720, H. W. Waddle, 2,726, J. Wörz, and 2,732, W. Asmus, Ventilating Apparatus. 2,731, Elder & Dunlap, Screening Machines. 2,742-3, W. J. Matthews, and 2,886, G. S. Mitchell, Brick, Tile, &c., Making Machines. 2,754, Caryle & Shannon, Dove-tailing Machines. 2,767, J. Fisher, a Combined Drawing Table Desk Easel Bracket and Stand for Use in Art Schools, &c. 2,775, W. Binnie, Subterranean Tunnelling. 2,799, W. Werner, Metallisation of Surfaces. 2,812, Klinck & Cooke, Brick and Stone Work. 2,822, Cohn & Brunckhorst, Fireproof Ceilings. 2,825, J. Gordon, for Attaching Glass Tiles to Walls, &c. 2,832, C. O. Weber, Lake Pigments. 2,833, G. D. Innes, Cast Metal Lavatory Stands. 2,843, J. Buller, Coal Economisers. 2,849, Tanner & Leigh, Electric Switches. 2,855, A. Bautz, Ovens. 2,868, C. J. Grist, Paving Blocks. 2,881, H. Winckler Drying and Warming Apparatus. 2,887, C. Ives, Plastic Compositions. 2,896, Hurry & Seaman, Portland Cement. 2,897, F. Swales, and 2,921, Mootham & Worth, Draught Excluders. 2,908, Hoare & Others, Spanners. 2,912, Allport & Bowman, a Solder and Flux. 2,927, H. Grafton, Dredgers. 2,932, W. Piskorski, Counterweight for Blinds. 2,946, Hampson and Shann, Tube Expanding. 2,958, G. Beamish, and 2,959, A. E. Rogers, Portfolios, &c., for Maps, Diagrams, Charts, and other sheets. 2,978, A. Wakefield, Jointing of Stoneware and other like Pipes. 2,979. Spreadbury and Others, Open Register and like Grates. 2,987, F. W. Cross, T-Squares. 2,989, Mitchelmore & Goodwin, Tubes and like Joints. 2,991, W. Mathiesen, Double Arc Lamp. 2,993, W. Tordoff, Flushing Cisterns. 2,994, W. S. Simpson, an Instrument for Producing and Marking Curves of any Radius or Form. 3,005, Cook & Keene, Parallel Rulers.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

January 28.—By PERKINS & SON (at Southampton).

Netley Marsh, Hants.—"Great Fletchwood Farm," 110 a. 0 r. 17 p., f.	£2,120

By HENRY LARGE (at Mildenhall).

Mildenhall, Suffolk.—High-st., a freehold residence, e.r. 35*l.*	535
Freckenham, Suffolk.—An enclosure of land, 5 a., f.	160
An enclosure of land, 30 a. 0 r. 2 p., c.	500

By GREEN & SON.

Drury-lane.—No. 87, area 798 ft., r. 133*l.* 18s., f.	1,600
Paddington.—29 and 30, Cambridge-pl., u.t. 59 yrs., g.r. 40*l.*, r. 130*l.*	920
Bishopsgate.—8, Devonshire-st., u.t. 60 yrs., g.r. 69*l.*, r. 140*l.*	825

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G.	ton	8/0/0 0/0/0
Teak, E.I....load		14/0/0 15/ /0
Sequoia, U.S. ft. cu.		1/8 1/10
Ash, Canada, load		3/c/0 4/c/0
Birch, do.		2/15/0 4/7/6
Elm, do.		3/15/0 4/15/0
Fir, Dantsic, &c..		1/ /0 3/9/0
Oak, do.		2/10/0 3/11/0
Canada		3/15/0 5/0/0
Pine, Canada red		c/c/0 c/0/0
Do. yellow		2/2/6 4/2/6
Lath, Dantsic, fath		4/11/0 5/10/0
St. Petersburg..		5/c/0 6/10/0
Wainscot, Riga, &c., log		3/c/0 5/0/0
Odessa, crown		3/5/0 5/c/0
Deals, Finland 2nd & 1st std 100		7/10/0 8/c/0
Do. 4th & 3rd		7/10/0 8/ /0
Do. Riga		6/c/0 7/c/0
St. Petersburg, 1st yellow		9/10/0 12/c/0
Do. 2nd yellow.		8/11/0 10/0/0
Do. white		8/0/0 11/0/0
Swedish		8/10/0 15/0/0
White Sea		9/0/0 15/10/0
Canada, Pine 1st		19/5/0 25/5/0
Do. do. 2nd		13/15/0 16/5/0
Do. do. 3rd, &c.		6/c/0 9/15/0
Do. Spruce, 1st		9/15/0 11/5/0
Do. do. 3rd and 2nd		7/5/0 8/5/0
New Brunswick		6/15/0 7/5/0
Battens all kinds		5/0/0 18/0/0
boards, sq., 1 in. prep. 1st		0/9/0 0/16/6
Do. 2nd		c/7/6 c/13/0
Other qualities—		c/6/0 c/7/3
Cedar, Cuba, ft.		/4 /4½
Honduras, &c.		/3¾ /4½
Mahogany, Cuba		/5 /6½
St. Domingo, cargo av.		/4¾ c/1/3
Mexican, do. do.		/3¾ /4
Tobasco, do. do.		/4 /5¾
Honduras, do.		/4½ /6
Box, Turkey, ton		4/c/0 15/c/0
Rose, Rio		7/ /0 14/c/0
Bahia		6/0 0 12/0/0
Satin, St. Doming.		0/0/5 0/1/0

TIMBER *(continued)*.		
Satin, Porto Rico		0/0/6 c/1/6
Walnut, Italian		0/ /3 c/0/7
METALS.		
Iron—Pig, in Scotland	ton	2/5/8 2/5/11½
Bar, Welsh, in London		5/15/0 5/17/6
Do. do. at works in Wales		5/10/0 5/12/6
Do. Staffordshire, in London		6/5/0 7/10/0
COPPER — British cake and ingot		52/c/0 53/0/0
Best selected		53/10/0 54/0/0
Sheets, strong		58/11/0 59/11/0
Chili bars		49/11/3 c/0/0
YELLOW MTL lb.		4¼d. 5d.
LEAD — Pig Spanish	ton	12/10/0 0/c/0
English com. bands		12/15/0 0/c/0
Sheet, English 6 lbs. per sq. ft. and upwards		13/15/0 c/ /0
Pipe		14/5/0 0/0/0
ZINC — English sheet	ton	20/5/0 0/c/0
Vieille Montagne		21/11/0 0/0/0
Spelter		17/18/9 18/1/3
TIN—Straits		64/3/0 c/0/0
Australian		64/12/6 65/2/6
English Ingots		66/15/0 67/15/0
Banca		61/0/0 0/0/0
Billiton		59/15/0 60/ /0
OILS.		
Linseed	ton	16/c/0 c/0/0
Cocoanut, Cochin		27/15/0 c/0/0
Do. Ceylon		22/0/0 0/0/0
Palm, Lagos		21/15/0 0/0/0
Rapeseed, English pale		27/10/0 0/c/0
Do. Brown		26/0/0 c/c/0
Cottonseed ref.		14/5/0 14/5/0
Oleine		13/10/0 14/10/0
Lubricating U.S.		c/5/3 c/7/6
Do. Black		0/5/0 0/6/6
TAR — Stockholm	barrel	1/0/3 0/c/0
Archangel		0/12/6 0/ /0
Turpentine		24/7/6 0/ /0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

ACCRINGTON.—For the execution of street works, for the Corporation. Mr. W. J. Newton, C.E., Town Hall, Accrington:—

William Hindle Bury	At per schedule of prices.
George Adams	

ALNWICK.—For the improvement of Houndean Bridge, Warkworth, for the Rural District Council. Messrs. Sandiman & Moncrief, engineers, Newcastle-on-Tyne. Quantities by engineers:—

Jeffrey Bros.	£949 1 8	R. Carse & Son, Amble*	£545 4 0
A. Douglas	645 0 0		
H. G. Green	559 0 0		

* Accepted.

ARDWYN.—For the erection of additional buildings at Ardwyn, for the Aberystwyth County School Authorities. Mr. T. E. Morgan, architect, 12, Baker-street, Aberystwyth:—

Owen Brothers	£3,407 0	Belham & Co., Aberystwyth and Buckingham Palace-road, London*	£3 195 0
Edward Evans	3 256 19		
David Lloyd	3,235 0		

* Accepted.

BARROW-IN-FURNESS.—For the execution of street works (one contract), for the Corporation:—

J. Cleator	£1,111 18 7	F. Mackenzie, Barrow-in-Furness*	£923 3

* Accepted.

[The three streets were let as one contract.

COMPETITION, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITION.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
*Public Baths	Winchester Corp.	25*l*. First and 15*l*. Second	Mar. 31

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
*Wood Paving Works	Mile End Guardians	C. F. Burden, Workhouse, Bancroft-road, E.	Feb. 21
*Repairs at Workhouse and Smiths' Work	do.	do.	do.
Sewage Works, Ruddington, Notts.	Basford R.D.C.	H. Walker, Engr. Newcastle-chmbrs Nottingham	do.
Additions to Railway Station, Lurgan, Ireland	G.N. Ry. Co. (Ireland)	T. Morrison, Amiens-st. Terminus, Dublin	Feb. 22
Additions to Workhouse	Belfast Union	Young & Mackenzie. Archt 7, Donegall-square East, Belfast	do.
*Road Works, St. Mark's-road, Lower Sydenham	Lewisham B. of W.	E. Wright, Lewisham Town Hall, Catford, S.E.	do.
*Paving Works, Glen View-road, Lewisham	do	do.	do.
*Wood Paving Works	Hammersmith Vestry	H. Maid, Town Hall, Hammersmith, W.	do.
Warehouse, &c. Clouth House Mills, Huddersfield		J. Kirk & Sons, Archts, Dewsbury	Feb. 23
Water Supply, Old Park	Belfast Water Commrs.	L. L. Macassey, Engr. Water Office, Belfast	do.
Additions to Schools	Runham U.D. Sch. Bd.	A. Hewitt, Archt, 15, King-st. Great Yarmouth	do.
Additions to No. 20, Greenside, Kendal	J. J. Wilson	S. Shaw, Archt. Kendal	do.
Three Shops and Houses, Kirkland, Kendal		J. Stalker, Archt. Kendal	do.
House, Eskmea's, near Lancaster	Vickers, Son, & Maxim, Ltd.	Austin & Paley, Archts. Lancaster	do.
Additions to Factory, Fletcher-street, Workington	Brothwell & Mills	W. G Scott & Co. Archt. Victoria-bldgs, Workington	do.
Earthenware Pipe Sewer, Thrum Hall-lane	Halifax Corp	E. R. S. Escott, C.E. Town Hall, Halifax	do.
Additions to School, Grange-road	Middlesbrough Sch.Bd.	J. M. Bottomley, Archt. 28, Albert-rd. Middlesbrough	do
*Works and Materials	Hackney Vestry	J. Lovegrove, Town Hall, Hackney	do.
Road Metal, &c.	Rawtenstall (Lancs.) Corp.	Borough Surv. Municipal, Offices	Feb. 24
Sewering, Draining, &c. Crescent-rd. and Several Others	Withington U.D.C.	A. Mountain, C.E. Town Hall	do.
Pipe Sewers, Mount Pleasant	Denton (Lancs.) U.D.C.	G. H. Newton, Surv. Market-place, Denton	do.
Concrete Sewer, &c.	Eccles (Lancs.) Corp.	A. C. Turley, C.E. Town Hall, Eccles	do.
Granite Slag, &c.	Notts C.C.	E. P. Hooley, Shire hall, Nottingham	do.
Road Metal, Annan	Dumfries C.C.	J. Galletly, Surv. Parkterrace, Annan, N.B.	do.
Road Works, Berwick	Norham & Islandshires R.D.C.	Mr. Short, Surv. Ord Cottage, Berwick	do.
Road Works	Bradfield (Berks) R.D.C.	J. Forrester, Surv. Theale, near Reading	do.
Warehouse, Clifton Mills, Bailiffe Bridge, Yorks.		J. F. Walsh, Archt. L. & Y. Bank-chmbrs. Halifax	do.
Brewery and Offices, Victoria-square, Hanley	Dix & Co.	E. Scrivener & Sons, Archts. Howard-place, Hanley	do.
Additions to Schools, Purlwell	Batley Sch. Bd.	W Haustock, Archt. Branch-road, Batley	do.
Additions to Church, Marsden, near Huddersfield		J. Kirk & Sons, Archt. Dewsbury	do.
Sewerage Works, Penybont	Conway R.D.C.	T. B. Farrington, Engr. Conway	Feb. 25
Memorial Church, Pluscarden, Elgin, N.B.		Reid & Wittett, Archt. Elgin	do.
School, Wesleyan Reform Chapel, Mountain, Queensbury, Yorks.		H. Hodgson, Archt. Old Bank-chmbrs. Bradford	do.
Electricity Station, &c.	Canterbury Corp.	City Surveyor, 28, St. Margaret's-street	Feb. 26
Stone Bridge over South Esk, Clova	Forfar Dist. Committee	D. Ross, Surv. Glebe ter. Kirriemuir, N.B.	do.
Six Cottages at Asylum, Cupar, N.B.	Fife, &c. Lunacy Bd.	Mr. Osborne, Board's Offices, Cupar	do.
House, Belle Isle-street, Workington	G. Brothwell	W. G. Scott & Co. Archt. Victoria-bldgs. Workington	do.
Pipe Sewers, &c. near Leeds	Hunslet R D C.	S Shaw, C.E. Dewsbury	do.
Additions to Workhouse, Central-street, &c.	Bolton Union	T. Greenhalgh, Archt. 12, Nelson-square, Bolton	do.
Shop and House, Chapel Close, Beast Banks, Kendal	R. F. Chorley	J. Stalker, Archt, Kendal	do.
Road Works, Bridport, Dorset		J. W. S. Bartlett, Surv. Pymore, Bridport	Feb. 28
Chapel, Penygroes, Llandebie, Wales		J. Davies, London House, Penygroes, Llandebie	do.
Road Materials	Towcester R.D.C.	W. Sheppard, Surv. Towcester	do.
Public Hall, Kirkpatrick Fleming, N.B.		G. D. Oliver, Archt. 5, Lowther-street, Carlisle	do.
*Oil Engine, &c. Pumps	Dorking Water Co.	J. Mansergh, 5, Victoria-street, S.W.	do.
*6,000 tons Welded Steel Pipes	Birmingham Corp.	J. Mansergh, 5, Victoria-street, S.W.	do.
*Crushed Granite or Granite Screening	Farnham U.D.C.	R. W. Cass, Surv. Farnham, Surrey	do.
*Laying-out Site and Erecting Buildings Pavilions, &c.	Malvern Hospital Com	The Surveyor	Mar. 1
Schools (Friars), Bangor, N. Wales		Douglas & Minshull, Archts. 6, Abbey-square, Chester	do.
Enlarging Convalescent Home, Moretonhampstead		E Richards, Archt. 3, Park-crescent, Torquay	do.
Additions to School	Moulton Sch. Bd.	C. Dorman & Sons, Archts. Abington-st. Northampton	do.
Additions to Asylum, Devons-road, Bromley	Poplar, &c. Asylum District Authorities	J. & S. F. Clarkson, Archts. 136, High-st. Poplar, E.	do.
Street Works, the Point	Exmouth U.D.C.	W. H. Seawick, C.E. Council's Offices	do.
Additions to Institution, Victoria-street, Windsor	Royal Infirmary Committee	G. P. Castland, High-street, Windsor	do.
Sanatorium Buildings, &c. Great Malvern	Malvern Hospital Committee	W. Lambert, Hospital Offices, Malvern	do.
*Road Materials, Watering & Cartage, Hospital Stores	Leyton U.D.C.	W. Dawson, Town Hall, Leyton, E.	do.
*Wall and Sheds	do.	do.	do.
*Making-up, Paving, Kerbing, &c. Streets	do.	do.	do.
*Paving, Kerbing, Laying Crossings, &c.	do.	do.	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
*Well and Heading Engine, Pump House, Dwellings, &c.	Desborough U.D.C.	J. B. Everard.6, Millstone-lane, Leicester	Mar. 1
*Engine Shed, Coaling Stage, &c. Blaydon-on-Tyne	N.E. Rly. Co.	W. Bell, Central Station, Newcastle-on-Tyne	Mar. 2
*New Wing, Pier Head, and Refreshment and Waiting Rooms	Southend-on-Sea Corp.	A. Fidler, Boro. Engr.	do.
*Making Up and Paving Road	Fulham Vestry	C. Batterill, Vestry Hall, Walham Green	do.
Pipe Sewer	King's Lynn Corp.	E. J. Silcock, C.E. King's Lynn	do.
Main Sewer, Alexandra Park	Oldham Corp.	S. A. Pickering, C.E. Boro. Surv. Town Hall	do.
Alterations to Museum	Norwich Union	J. B. Pearce, Surv. 15 Upper King-st Norwich	do.
*Iron and Pipe Sewers	Watford U.D.C.	Offices, 14, High-street, Watford	do.
*Cast-iron Socket Pipes	Ryde Corp.	C. Matthew, Town Hall	do.
*Sub-Police Station, Worthing	County of W. Sussex	R. S. Hyde, Eriswell-road, Worthing	Mar. 3
Residence, near Galbally, Ireland	Mitchelstown Union	R. Fitzgibbon, The Workhouse, Mitchelstown	do.
Road Materials	Brixworth R.D.C.	W. C. Woodford, 18, Market-sq. Northampton	do.
Two Schools (and Additions), Old-road, St. Paul's	Llanelly Sch. Bd.	J. B. Morgan, Archt. New-road, Llanelly	do.
Church, Gortin, co. Tyrone	Rev. F. Healy	E. J. Toye, Archt. Strand, Londonderry	Mar. 4
Villa, Greenroyd Estate, Skircoat, Halifax		G. Buckley & Son, Archts. Tower-chmbrs. Halifax	do.
Bridge Abutments, &c.	Salford Corp.	Boro. Engr. Town Hall	do.
Surveyor's Materials, Maidstone	Kent C.C.	F. W. Ruck, Surv. Week-street, Maidstone	do.
*Erecting a Building at Post Office, Birmingham	Commrs. H.M. Works	Office, 12, Whitehall-place, S.W.	do.
*Various Materials	Bermondsey Vestry	Vestry Clerk, Spa-rd. S.E.	Mar.
*Driving Bore Hole	E. Ashford Union	H. Knock, New-street, Ashford	do.
*Fire Engine Station, Lewisham	LondonCountyCouncil	Archt.'s Dept. 13, Springgardens, S W.	Mar. 8
Villa, Skircoat Green-road, Halifax		G. Buckley & Son, Archts. Tower-chmbrs. Halifax	Mar.
*Technical Institute	Norwich Corp.	A. E. Collins, Guildhall, Norwich	do.
*Buildings, Walling, &c.	Dartford Union	G. H. Tait, Lowfield st. Dartford	Mar. 14
*Articles, Works, &c.	Rotherhithe Vestry	J. J. Stokes, Town Hall, Lower-road, S.E.	do.
*Erection of Superstructure of Asylum with Offices, &c.	County BoroWest Ham	L. Angell, Town Hall, Stratford, E.	do.
Electricity Works	Watford U.D.C.	W. C. C. Hawtayne, Engr. 20, Bucklersbury, E.C	Mar. 16
*Guernsey Granite, also Cartage of Gravel, &c.	Middlesex C.C.	County Surv. Guildhall, Westminster	do.
*Infirmary Wards and Buildings, at Workhouse	Ecclesall Bierlow Union	J. D. Webster, 19, St. James's-street, Sheffield	Mar. 21
*Works and Materials (various)	Camberwell Vestry	O. S. Brown, Vestry Hall, Peckham-road	See adv.
Boiler House, &c. Bradford		F. Holland, Engr. Hustlergate, Bradford	No date
Two Houses, Victoria Park Estate, Bramley, nr. Leeds		Architect, 101, Burley Lodge-road, Leeds	do.
Offices, Albert-chambers, Harrogate	J. Smetham	Whitehead & Smetham, Archts. Albert-chambers, Harrogate	do.
Alterations, &c. to Premises, Highgate, Kendal		J. Hutton, Archt. Kendal	do.
Cottages, Barton Close, St. Cross, &c. Winchester		W. B. Hill, Archt. Southampton	do.
Hall, Clarence-road, Newport, I.W.		E. A. Swane, Archt. 30, Nodehill, Newport	do.
Several Houses, Wood Lee-st. Belfast		J. Galway, 10, Paxton-st. Belfast	do.
Pipe Sewers, Woodhouse-rd. Keighley		D. W. Weatherhead, Surv. 50, Low-street, Keighley	do.
Fire-clay Retorts, &c.	Chorley Corp.	J. Mills, Town Hall, Chorley	do.
Additions to Boyle Hall, West Ardsley		Nelson & Savage, Archt. 15, Park-row, Leeds	do.
Stone Church, Savile Town, Dewsbury		C. J. Ferguson, Archt. 42, Clareville-grove, South Kensington, S W.	do.
*Club Premises	Epsom Conservative Club	F. W. Sedger, 8, Philpot-lane, E.C.	do.
*Steam Mains, Valves, Pumps, &c.	W. Riding C.C.	County Surveyor's Office, Wakefield	do.
Detached Residence, Gosforth		W. L. Newcombe, Archt. 89, Pilgrim-street, Newcastle-on-Tyne	do.
*Two Houses, Herne Bay		J. Huxtable, 30, Bismarck-road, Highgate Hill, N.	do.
Additions to Church, Ashington Durham		Hicks & Charlewood, Archt. 42, Grainger-street, Newcastle-on-Tyne	do.
Cottage Homes, Middlewood, nr. Wardle	Rochdale Union	Butterworth & Duncan, Archt. 4, South Parade, Rochdale	do.
Shop Premises, Yorkshire-street, Wardleworth	Rochdale Prov. Co-op. Soc. Ltd.	G. A. Hammond, Archt. Rochdale	do.
House, Westerhope, West Kenton		H. W. Taylor, Archt. St. Nicholas-chambers, Newcastle-on-Tyne	do.
Two Houses, Oakly-road, Redditch		J. Barnes, Unicorn Hill, Redditch	do.
Store and Three Houses, Mills Hill	Middleton and Tonge Indus. Soc. Ltd.	F. W. Dixon, Archt. Union-street, Oldham	do.
Granite and Slag	Gainsborough R.D.C.	R. Maxwell, Surv. North Marsh-road, Gainsborough	do.
Church, Ejwynfi, nr. Llangattock		E. H. Bruton, Archt. 15, Queen-street, Cardiff	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in.
*Assistant Superintendent for Sewage Works	Willesden U.D.C.	2*l*. per week and residence	Feb. 22
*Surveyor	Shanklin U.D.C.		Mar. 1
*Building Inspector & Drains Inspector	County Boro Croydon	50*s*. per week rising to 60*s*. each	Mar. 3
*Surveyor	St. Marylebone Vestry	600*l*. per annum	Mar. 7
*Assistant Surveyor	do.	250*l*. per annum	do.
*District Superintendent	do.	150*l*. per annum	do.

Those marked with an asterisk (*) are advertised in this Number. *Competition, p.* iv. *Contracts, pp.* iv. vi. vii. viii. *&* ix. *Public Appointments, pp.* xix. *&* xxii.

ASCOT (Berks).—For additions to "Station" Hotel. Mr. S. Johns, architect, Wallingford:—

Hotel.

W. Satchwell	£937	J. Bucke	£750
C. H. Churnes	795	J. Trust	649
W. Watson, Ascot*	764		

Hotel and Stables, &c.

	Hotel.	Stables.	Total.
W. Watson	£764	£190	£954
J. Buckel	750	264	1,014
C. H. Churnes	795	350	1,145
W. Satchwell	937	Hotel only.	
J. Trust	649	Hotel only.	

* Accepted.

BLEATARN.—For works in connexion with the Bleatarn water supply, for the East Westmoreland Rural District Council. Messrs. G. Watson & Son, engineers, 3, St. Andrews-place, Penrith:—

Scott & Dent	£388 0 4	J. Jackson	£354 0 0
J. Bowerbank	369 10 0	J. & W. Scott,	
W. Taylor	359 0 0	Penrith*	345 0 0

* Accepted.

BRANCEPETH (Durham).—For the construction of a Cosham's patent sewage precipitation tank, with catchpit, baffling channel, inlet and outlet pipes, store-shed, and fence around the same, at Brancepeth Village, for the Durham Rural District Council. Mr. Geo. Gregson, Surveyor to the Council, Eastwood, Western-hill, Durham. Quantities by the Surveyor:—

John Manners	£239 0 0	Geo. T. Manners, Durham (accepted)	£183 0 0
John Carrick	205 0 0	Surveyor's estimate, £207.	
William Pratt	197 6 10		

BRISTOL.—For the erection of chapel, &c., Jacob's Well-Clifton, for the trustees. Mr. A. R. F. Trew, architect. 22, Broad-street, Bristol. Quantities by Mr. Wm. Veals, St. Stephen's-avenue, Bristol:—

	Chapel and School.	New Roof.	Repair of Wall.
E. Love	£1,963 0 0	£111 0 0	£24 0 0
Alf. Dowling	1,775 0 0	133 0 0	50 0 0
L. Thomas & Son	1,610 0 0	130 10 0	16 10 0
Edwd. Walters	1,590 0 0	107 0 0	20 0 0
Edwin Clark	1,580 0 0	120 0 0	15 0 0
Hughes & Weeks	1,575 0 0	101 0 0	10 0 0
Jno. Bastow	1,550 0 0	130 0 0	80 0 0
Thos. Lovell & Son	1,445 10 0	93 0 5	12 10 0
J. B. Davis	1,339 10 0	99 9 0	20 0 0
Geo. Elmes, Bedminster (accepted)	1,295 0 0	73 0 0	27 8

BRISLINGTON.—For additions to schools. Mr. W. V. Gough, architect, 24, Bridge-street, Bristol :—

G. Humphreys	£512	Love & Waite	£473
J. Bastow	490	J. Hatherley	477
E. Walters	492	G & L. Poole	456
C. A. Hayes	480	W. Cowlin & Son, Bristol*	369

* Accepted.

BURTON-ON-TRENT.—Accepted for the erection of four houses in Scalpcliffe-road, for Mr. Geo. Lowe. Mr. Thomas Jenkins, architect, 35, High-street, Burton-on-Trent. Quantities by the architect :—

Kennard, Geo. (lowest tender out of eight) £768

BURTON-ON-TRENT.—For alterations at the "Man in the Moon," for Messrs. Robinson's Brewery, Limited. Mr. Thomas Jenkins, architect, 35, High-street, Burton-on-Trent. Quantities by the architect :—

Geo. Hodges	£1,056	T. Lowe & Sons, Burton-on-Trent*	£935
Geo. Kennard	949		

* Accepted.

BURTON-ON-TRENT.—Accepted for the erection of a villa residence at Stapenhill, for Mr. Thomas Banks. Mr. Thomas Jenkins, architect, 35, High-street, Burton-on-Trent. Quantities by the architect :—

T. B. Jackson, Burton-on-Trent £520

BURTON-ON-TRENT.—For alterations to premises in High-street, for the Burton Union Bank, Limited. Mr. Thomas Jenkins, architect, 35, High-street, Burton-on-Trent. Quantities by the architect :—

G. Hodges	£1,242	Lowe & Sons, Burton-on-Trent (accepted)	£1,181
H. Edwards	1,195		

BURTON-ON-TRENT.—For extensions to offices in Branstone-road, for Messrs. Charles Perks & Sons. Mr. Thomas Jenkins, architect, 35, High-street, Burton-on-Trent. Quantities by the architect :—

J. Hunter	£168	W. A. Stevenson, Burton-on-Trent*	£144 10
H. Edwards	160		

* Accepted.

COOKHAM (Bucks).—Accepted for building a villa for Mr. G. C. Jackson. Mr. J. Hume, architect and surveyor, Chiswick :—

Pope & Co., Hammersmith £850

[No competition.]

CRAWCROOK (Durham).—For the erection of shop, &c., for Mr. T. Pattinson. Mr. Michael Westgarth, architect, Quantities by architect :—

Masonry.—R. Gibson	£333 10,
Joinery.—R. Watson	192 10
Plastering.—J. Edington	64 0
Slating.—E. Beck & Son	48 0
Painting.—M. Rutter	27 0
Plumbing.—F. Jefferson	17 0
	682 0

CROYDON.—Accepted for new front, and other alterations to 23, George-street, for Messrs. Hollands & Laws. Mr. A. Broad, architect, 22, George-street, Croydon :—

S. Page £600

[No competition.]

CROYDON.—For shop fittings, &c., to Mr. J. Allders' North End and George-street premises. Mr. A. Broad, architect, 22, George-street, Croydon :—

H. Clarke & Co.	£673 17 6	E. J. Saunders	£625 0 0
E. P. Bulled & Co.	634 0 0	A Bullock (accepted)	574 0 0

CROYDON.—For additions to Woodford House School, Dingwall-road, for Miss Waters. Mr. A. Broad, architect, 22, George-street, Croydon. Quantities by the architect :—

A. Bullock	£828	E. J. Saunders	£729
W. Smith & Son	823	E. P. Bulled & Co	694
J. Smith & Sons	798	Hanscomb & Smith	687
S. Hart	765	D. W. Barker	666
S. Page	750	Pearson & Co. (accepted)	588

CWMBRAN (Mon.)—For the erection of a police-station, for the Standing Joint Committee. Mr. W. Tanner, County Surveyor, Monmouth :—

Bailey Bros.	£1,805	A. E. Parfitt	£1,610
H. W. Parfitt	1,720	Dyson Parfitt	1,609
J. Morgan	1,687	D. W. Richards	1,534
T. G. Diamond	1,650	C. H. Reed	1,523
T. Westacott	1,642	John Linton	1,498
J. Moore	1,610	John Charles, Newport*	1,446

* Accepted.

GWERSYLLT (Wrexham).—For the erection of additions to the National Schools, for the Committee. Mr. John Plant, architect, Fern Bank, Gresford, North Wales. Quantities by the architect :—

W. E. Samuel	£1,100	W. H. Wycherley & Co.	£844 10
R. Williams	890	H. Roberts, Rhosrobin, Gwersyllt (accepted)	758 0
Thos. Regers & Son	865		

HASTINGS.—For repairs and alterations to 31, Queen's-road, Hastings. Mr. William Cooper, architect and surveyor :—

F. O. Dray	£210	W. E Warman	£188 5
Topner & Woodman	193 1	W. Cousens	183 12

HASTINGS.—For erecting a detached house, St. Helen's-road, Hastings. Messrs. W. H & J. D. Murray, architects :—

Barter & Gasson	£1,597 10	Padham & Hutchinson	£1,979 0
P. Jenkins	1,995 0	W. E. Warman	1,975 0
Eldridge & Cruttenden	1,991 10	W. Small	1,865 0

HORNCASTLE (Lincs.).—Accepted for the supply of road material, &c., for the Rural District Council :—

Granite.

	Tons.		s.	d.
J. & C. Wood, Boston	1,500	of Mountsorrel at	11	3 per ton
Ellis & Everard, Leicester	1,500	Bott's Hill	11	0 ,,
Charnwood Granite Co.	1,500	Charnwood	11	0 ,,
Walter & Hensman	1,500	Groby	11	2 ,,
W. Mawer & Sons	400	Whitwick	9	10 ,,

Slag.

	Tons.		s.	d.
L. Sommerfeld, King's Lynn	500	of Cransley at	7	8½ per ton
W. Mawer & Sons, Wragby	500	Holwell	6	2 ,,
W. S. White & Co., Lincoln	500	Bestwood	6	7½ ,,
Ellis & Everard, Tallington	500	Wellingboro'	8	0 ,,

HUDDERSFIELD.—Accepted for the erection of a vicarage, Bradley. Mr. T. H. Farrar, architect, Fountain-chambers, Fountain-street, Halifax :—

Excavating and Masonry.—Graham & Jessop, Huddersfield	£1,052 0
Carpentry and Joinery.—Graham & Jessop, Huddersfield	596 0
Plumbing and Glazing.—John Marsden, Huddersfield	149 0
Slating and Plastering.—S. Johnson & Son, Mirfield	164 10
Painting.—J. Spencer & Son, Halifax	18 0

KINGSTON-UPON-HULL.—For the completion of offices, Albion-street, for the School Board. Mr. W. Botterill, architect, 23, Parliament-street, Hull :—

G. Johnson	£3,800	Colley & Levitt	£3,608
Hockney & Liggins	3,698	Exors. of T. Southern, Hull*	3,563
G. Houlton	3,670		
M. Harper	3,610		

* Accepted.

LEAMINGTON.—For the execution of limestone tar-paving works, for the Corporation. Mr. De Normanville, Engineer, Town hall, Leamington ;—

	£ s. d.	Rate per super yard for 2½ in. pavement. s. d.	Rate per super yard for 5 in. pavement. s. d.
J. J. Ingham	737 12 10	1 9	2 5
B. Shakeshaft Jones	727 1 8	1 8	3 6
Asphalte Limestone Concrete Company	687 9 8	1 7	3 2
North of England Asphalte Company	647 17 8	1 6	2 10
W. Shepherd, Rochdale*	629 15 10	1 5½	2 9

* Accepted.

LONDON.—For sewerage work, Fortis Green, for the Hornsey District Council. Mr. E. J. Lovegrove, Engineer and Surveyor to the Council :—

F. A. Jackson & Son, Limited	£683 4 0	Killingback & Co.	£628 0 0
Mowlem & Co.	669 0 0	J. E. Bloomfield	626 14 2
Nowell & Robson	660 15 4	J. A. Dunmore	623 0 0
Neave & Son	647 14 0	W. Griffiths	620 10 4
Williamson & Sons, Limited	635 15 0	H. Clark	617 10 0
E. & C. J. Nicholls	633 1 1	Thomas Adams	617 9 6
		George Bell*	613 0 0

* Accepted.

LONDON.—Accepted for alterations and internal fittings at Nos. 26 and 27, Bush-lane, for Mr. Alderman Truscott. Mr. G. Gordon Stanham, architect, 11CB, Queen Victoria-street, E.C. :—

John Appleby, Cornwall-road, S.E. £245

LONDON.—For alterations to "Windsor Castle" public-house, High-road, Lower Clapton, N.E., for Mr F. W. Bloxham. Mr. J. G. Needham, architect and surveyor, 18, Lower Clapton-road, Clapton, N.E. :—

Building.

J. & T. Linkpen	£2,000	G. Todd	£1,983
Philips & Beseker	1,985	W. J. Maddison	1,675

Pewtering.

Rogers, Commercial-road	£48 0	Rogers, Hackney-road*	£39 10

Gas-fitting.

F. Islip	£185 0 0	J. Steadman	£174 17 6

* Accepted.

LONDON.—For converting "Mawson House," Chiswick-lane, into a public-house, to be called "The Fox and Hounds, and Mawson Arms," for Messrs. Fuller & Co., Griffin Brewery. Mr. J. Hume, architect and surveyor, Chiswick. Quantities by surveyor :—

S. Hunt	£1,733	L. L. Leeder & Co.	£1,635
Chamberlen Bros.	1,690	Speechley & Smith*	1,487
T. H. Adamson & Son	1,669		

* Accepted.

LONDON.—Accepted for building forty-one houses, Chiswick (Strand-on-the-Green, on the Hearne Estate), for Mr. R. V. Wellesley. Mr. J. Hume, architect, Chiswick :—

W. Rowsell £10,250

[No competition.]

LONDON.—For the erection and completion of an infirmary for 800 beds, with the necessary alterations and additions to form the present buildings into a nurses' block, &c., on the site of the late Small Pox Hospital, Highgate Hill, N. Mr. William Smith, architect, 65, Chancery-lane, London, W.C. Quantities by Mr. H. Dow White, 52, Finsbury Pavement, E.C. :—

		Extra if walls of wards above dado faced with glazed bricks.
F. Gough & Co.	£223,645	£4 640
Patman & Fotheringham	211,474	4 937
Leslie & Company	199 747	4 486
Chessum & Sons	198,453	4,500
H. Martin (Northampton)	197,462	4,563
F. & M. Patrick	195,547	6,315
Charles Wall	194,000	4 300
C. Gray Hill	186,500	5,063
Kirk & Randall, Warren-lane Works, Woolwich (accepted)	181,523	4 529

LONDON.—For alterations to the Manor House, including the erection of boiler-house, chimney, and two lodges, and for the erection of temporary buildings, for the London County Council :—

Alterations and additions to Manor House.

Leslie & Co.	£22,429	Kirk & Randall*	£20,812
W. Harbrow	21,711		

Erection of temporary buildings.

E. C. & J. Keay	£77,798 0 0	Kirk & Randall	£68,500 0 0
F. Gough & Co.	72,897 0 0	Humphreys, Ltd.,	66,506 0 0
W. Harbrow	72,489 0 0	Leslie & Co.*	64,263 0 0
Hawkins & Co.	68,762 11 1		

* Accepted.

The estimate of the asylums engineer in respect of the former work is £16,679, and in respect of the latter, £64,950.

LONDON.—For the erection of a block of flats (Block 1) at Sloane-court, Chelsea, S.W. Mr. Paul Hoffmann, architect, 152 and 153, Palmerston-buildings, Old Broad-street, E.C. Quantities by Messrs. Dunk & Bousfield, Billiter-square-buildings, E.C. :—

John Allen & Sons	£18,950	C. H. Keasley	£18,610
Fred Britton	18 9 0	J. Grover & Sons*	18,178

* Accepted.

LONDON.—For making up private roads, for the Hornsey District Council. Mr. E. J. Lovegrove, Engineer and Surveyor to the Council :—

	Queen's-avenue (First Section).	Mattison-road (Second Section).	Bedford-road.	Eastfield-road (extension of).
Nowell & Robson	£3 737 0 8	£952 14 0	£1,025 4 0	£334 6 9
Mowlem & Co.	3 636 19 6	931 13 1	1,001 17 1	325 1 1
J. A. Dunmere	3 615 11 6	923 12 6	997 6 6	327 8 8
Neave & Son	3.573 2 6	9 2 19 2	979 18 0	318 2 11
Williamson & Son, Limited	3.571 0 0	914 19 6	985 9 0	324 0 0
E. & A. J. Nicholls	3.563 3 0	918 0 5	979 0 0	321 4 8
Geo. Bell	3.560 0 0	918 0 0	978 0 0	317 0 0
J. E. Bloomfield	3 557 2 6	918 15 6	978 3 8	316 7 0
F. A. Jackson & Son, Limited	3 556 0 0	911 0 0	981 0 0	318 0 0
Killingback & Co.	3.555 0 0	907 0 0	983 0 0	319 0 0
W. Griffiths	3.547 13 2	901 3 0	970 5 5	311 6 2
Thos. Adams (accepted)	3 387 13 11	874 15 2	944 7 9	304 4 0

LONDON.—For building skittle alley and reception-room at "The Britannia" public-house, Hammersmith, for Messrs. Fuller & Co., Griffin Brewery. Mr. J. Hume, architect and surveyor Chiswick. Quantities by architect :—

Pope & Co.	£312 0	Holliday*	£294 17
R. Heywood	298 0		

* Accepted.

LONDON.—For sundry alterations to 15, Castle-street, Finsbury for Mr. Charles Tatten. Mr. C. R. Winter, architect :—

Jarvis & Son	£314 0	Harborow	£217 10
J. R. Batley	198 0	W. Irwin	247 0

LONDON.—Accepted for erecting the Higher Grade Schools, Wood Green, N., for the Tottenham School Board. Mr. A. M. Butler, architect, 16, Finsbury-circus, E.C. :—

H. Knight & Son, Tottenham £16,972

[Revised estimate].

LONDON.—For pulling-down and rebuilding "The George the Fourth" public-house, Portugal-street, Clare Market, W.C., for Messrs. Hoare & Co. Messrs. Perry & Reed, architects, 9, John-street, Adelphi, W.C. :—

Dove Bros.	£8 325	Clarke & Bracey	£8,028
H. Knight & Son	8 295	Perry & Co.	7.749
Hall, Beddall, & Co.	8,242	Patman & Fotheringham	7.440
Holloway Bros.	8,176		

LONDON.—For alterations and decorations at No 2, Cromwell-houses, for the Right Hon. Lord Russell of Killowen. Mr. C. G. Keogh, architect :—

		Stables.
Birtram & Son	£2,589 12 11	£688 17 11
Fleming & Watson	2,312 0 0	512 0 0
Bishop & Co.	2,254 0 0	579 0 0
Bensted & Son	2 172 0 0	527 0 0
A. A. Webber	2,165 0 0	546 0 0

LONDON.—For alteration to the North Lodge Stores, South-Eastern Hospital, New Cross, for the Metropolitan Asylums Board :—

H. Wall & Co.	£574	Leslie & Co., Ltd.	£491
Wm. Johnson & Co., Ltd.	558	Jno. Ham & Son	489
General Builders, Ltd.	530	Wm. Irwin (accepted)	477

LONDON.—For the erection of factory and warehouse, Valentine-place, Blackfriars-road, S.E., for Mr. James Pascall. Mr. W. H. Woodroffe, architect, 214, Great Dover-street, S.E. :—

Hall, Beddall, & Co.	£13,761	W. Smith & Son	£12,287
Higgs & Hill	13,284	Harris & Wardrop	11 623
George Parker	12,295	James Smith & Sons*	11,227

* Accepted.

LONDON.—For rebuilding 18, Old Cavendish-street, Cavendish-square, W. :—

Bywaters	£3,186	Godson	£2 933
Mattock Bros.	3,093	A. A. Webber	2 930
Romer	3 041	Holt & Sons	2,875
Barker	3,025		

LONDON.—For the reconstruction of drainage and other sanitary works at the Infirmary, St. John's-hill, S.W., for the Guardians of the Poor of the Wandsworth and Clapham Union. Mr. Thos. W. Aldwinckle, Architect. Quantities by Mr. Bernard Swinstead :—

S. W. Aries & Co.	£6.826	D. T. Bostel & Sons	£4.575
Garrett & Son	5 349	Gardner & Hazell	4,492
E. A. Roome	5,134	Barrett & Power	4.489
H. Wall & Co.	5 125	H. Roffey*	4,200
W. Johnson & Co., Limited	4.975	J. Fleming & Co.	3,764
D. McNeill	4,766	J. Knight & Sons	3,730
R. P. Beattie	4 675		

* Accepted

LOUGHBOROUGH.—For the execution of road works, for Mr. Warner. Messrs. Woolley & Holbeche, surveyors, Rectory-place, Loughborough :—

John Holme	£1,461 2 9	Main, Kendall, & Main	£1,292 0 0
T. Barker & Son	1 398 0 0	Geo. F. Tomlinson, Derby (accepted)	1,215 0 0
A. Faulks	1,398 0 0		
W. Moss & Son	1,350 0 0		

MANCHESTER.—For the erection of new tower, various alterations to existing premises, re-draining and paving, &c., at the Openshaw Brewery, Openshaw, Manchester, for the Directors of the Openshaw Brewery Co., Limited Messrs. C. K. and T. C. Mayor, architects, 41, John Dalton-street, Manchester. Quantities by Mr. H. Stone, King-street, Manchester :—

R. Neill & Sons	£5,893 0	R. Carlyle, jun.	£5,479 0
F. & E Haynes	5,788 12	Burgess & Galt	5.440 0
P. Hodkinson	5.680 0	G. & C. Jackson, Higher Openshaw, Manchester*	5.430 0
G. Macfarlane	5,598 0		

* Accepted.

[Architects' estimate, £5,500]

MICKLEOVER.—For the execution of sewerage works, for the Repton Rural District Council. Mr. J. Campbell, Surveyor. Quantities by the Surveyor :—

Jos. Tomlinson	£318	G. F. Tomlinson	£310
Thos Radford, Mickleover*	315	P. T. Robinson	312
J. Vernon	312		

* Accepted.

MIDDLESBROUGH.—For the erection of police-station, Cannon-street, for the Corporation. Mr. Frank Baker, C.E., Municipal-buildings, Middlesbrough :—

Newby & Co.	£520 0	David Doughty	£147 10
Hudson Bros.	451 0	Fred Chapman*	416 0

* Accepted.

[All of Middlesbrough.]

MIDDLETON (Lancs.).—For the execution of street works, Higher Cross-street, &c., for the Corporation. Mr. W. Welburn, Borough Surveyor, Town Hall, Middleton. Quantities by Borough Surveyor :—

T. Kilburn, Bolton	£2.090
E. Partington & Sons, Middleton*	2 062
J. Ainscuth & Sons, Oldham*	1,928

* Portion only.

NEWBURY.—For additions, &c., to General Supply Stores, Bartholomew-street, for Messrs. Walker. Mr. Samuel Johns, architect, Wallingford :—

E. W. Elms & Sons	£808 5	Pope & Co., East Woodhay, Newbury*	£729 0
E. McCarthey Fitt	777 0		
E. & H. James	728 0		

* Accepted.

PLEASLEY.—For additions to schools, Shirebrook, for the School Board. Mr. F. Ball, architect, 23, King-street, Nottingham :—

Wm. Rigley	£2,646 17	John Oscroft	£2,313 0
J. H. Williamson	2.475 0	Henry Vickers	2,255 0
H. Gilbert	2 400 0	Adam Eastwood, Warsop, Mansfield*	2,252 7
A. G. Bell	2,322 0		

* Accepted.

PORT TALBOT (Wales).—For the erection of schools, for the Margam School Board. Mr. F. B. Smith, architect, Port Talbot :—

Meredith	£7.135	Bennett Bros.	£6 350
D. Davies	6,930	W. H. Ingleson	6,282
D. T. Davies	6,580	E. Groom	6.217
Walters & Johns	6,500	J. Davies	6,140
D. Jenkins	6,399	M. Cox	6 130
G. & T. Gaen	6,392	E. Thomas, Seven Sisters*	6,120

* Accepted.

RICHMOND.—For the erection of three shops at Hill Rise, Richmond, Surrey, for Mr. H. Reeves. Mr. Paul Hoffmann, architect, 152 and 153, Palmerston-buildings, Old Broad-street, E.C. Quantities by Messrs. Dunk & Bousfield, Billiter-square-buildings, E.C. :—

W. R. Rickard	£1,760	C. Eldridge	£1,470
G. H. Line	1,678	S. Soule	1.444
B. Myring	1.486	Messrs. Messom*	1,435

* Accepted.

RAINHAM (Kent).—For the erection of two houses. M Simeon Hunt, architect, 129, Queen's-road. Brighton :—

Henry Phillips	£1,260 0 0	Geo. Gilbert, Rainham*	£600 0 0
J. H. Harris	850 0 0		
J. L. Trueman	634 0 0	Saunders & Co.	561 12 6

* Accepted.

RISCA (Mon.).—For new partitions, and improvements to drainage, at Pontymister, Ocherwyth, Cross Keys, and Risca Town Schools, for the Risca School Board. Mr. Geo. Rosser, architect, Newport and Abercarn (Mon.) :—

J. Lewis	£426 11	J. Pritchard, Pontymister, Mon. (accepted)	£397 0
W. Forward	424 0	J. Hooper	353 0

ROMFORD (Essex).—For erecting a club house on the Gidea Hall Estate, for the Romford Golf Club. Messrs. Douglas Young & Co., architects, 51, Coleman-street, E.C. Quantities by Mr. Fred. G. Fletcher, 61 and 62, Chancery-lane, W.C. :—

A. Partridge Bros.	£3,850 0	Dowsing & Davis	£3,677 0
Perry & Co.	3,724 0	F. Stevens	3 638 0
Hall, Beddal, & Co.	3,600 0	J. S. Hammond & Son*	3,537 0
H. Booth	3,582 18	Newmans, Limited	3,495 0

* Accepted.

SANDBACH.—For alterations to house and shop, Bond-street, for the Sandbach Co-operative Society, Limited. Mr. A. Price, architect. Sandbach :—

J. Stringer	£230	Birchall Bros., Middlewich*	£175
H. Wharton	197		

* Accepted.

SKEGNESS (Lincs).—For the erection of laundry buildings for the Skegness Steam Laundry Company, Ltd. Mr. J. Rowell, architect, Borough Surveyor's Offices, Market-place, Boston :—

S. Bradley and T. H. Cade (jointly)	£1,179	G. Dunkley & Son	£922
J. Walker	1,045	H. W. Parker, Boston, Lincs. (accepted)	875

SLAITHWAITE (Yorks).—For the erection of a residence, Lingards. (Mr. J. Berry, architect, 9, Queen-street, Huddersfield :—

Masonry,—Wm. Holroyd, Grimble, Staithwaite ....
Joinery.—E. Hagland & Sons, Slaithwaite.....
Plumbing.—H. Webb, Paddock .....
Plastering and Painting.—Jas. Walker, Slaithwaite .....
Slating.—A. Bower, Crosland Moor .....
Concreting.—John Cooke, Little Royd..... } £850

SOUTHALL (Middlesex).—For the execution of road works, for the owners of the Middleton Building Estate. Messrs. Walton & Lee, surveyors, 10, Mount-street, Grosvenor-square, W. :—

H. Morecroft	£2,240 0 0	T. Adams	£1,449 0 0
G. Overton	1,815 0 0	G. Bell	1,437 0 0
W. Langridge	1,796 0 0	W. H. Wheeler	1,408 0 0
A. & B. Hanson	1,778 0 0	G Winpey	1,380 0 0
J. Macklin	1,704 0 0	Henry Lee	1,365 19 8
S. Kavanagh	1,606 0 0	Lawrence & Shacker	1,310 0 0
H. Hill	1,576 0 0	H. Woodham, Blackheath*	1,299 0 0
W. Swaker	1,450 0 0		
H. Bentham & Co.	1,449 0 0		

* Accepted.

SUTTON (Surrey).—For the formation, sewering, &c., of two new roads on the Beauchamp Estate, Sutton, for Mr. William Hazard. Messrs. Morgan, Baines, & Clark, surveyors, Sutton :—

S. Kavanagh	£2,158 17 4	J. B. Potter	£1,690 0 0
W. Langridge	1,874 0 0	W. H. Wheeler	1,422 0 0
Free & Sons	1,806 0 0	W. Jenner, Sutton*	1,296 2 10
T. Adams	1,739 0 0		

* Accepted.

UPPER WARLINGHAM.—For alterations to "The Whyteleafe" Tavern, for Messrs. Page & Overton. Mr. A. Broad, architect, 22, George-street, Croydon :—

E. J. Saunders	£189	J. Quittenton	£153
A. Bullock	185	G. Cheeseman (accepted)	138

WALSALL.—For the execution of road works, West Bromwich-road, for the Corporation :—
Mr. James Atkins, Ryecroft, Walsall £276 15 10

WEYBRIDGE.—For erecting billiard-room at "Netherfield House," for Mr. A. Hartman. Mr. A. C. Payne, architect, 74, Regent-street, W. :—

Jarvis	£1,966	W. Irwin	£1,617
Spretchley & Smith	1,660		

WESTON-SUPER-MARE.—For additions to Nos. 13 and 14, Waterloo-street, for Messrs. Lance & Lance. Mr. S. J. Wilde, architect, Boulevard-chambers, Weston-super-Mare :—

T. Allen	£500	C. Addicott, Locking-road, Weston-super-Mare*	£390
Keen & Keen	440		

* Accepted.

WESTON-SUPER-MARE.—For the erection of a dwelling-house, for Messrs. Bryant & Sons. Mr. S. J. Wilde, architect, Boulevard Chambers, Weston-super-Mare :—

C. Penny	£398	Dubin	£325
T. Allen	340	J. Solway, Weston-super-Mare*	270
L. Gibbs & Son	335		

* Accepted.

WORSLEY (Lancs.).—For the execution of street works (four contracts), for the Urban District Council. Mr. J. T. Proffit, C.E., Council Offices, Walkden, near Bolton :—

	£	s.	d.	
Jos. Bridge	220	8	10	Louisa-street.
	366	15	5	Fereday-street
	183	9	0	Wardley-street
	375	1	0	Victoria-street.
Alfred Watson	209	0	4	Louisa-street.
	367	4	6	Fereday-street.
	161	4	7	Wardley-street.
	375	6	6	Victoria-street.
W. Snape & Sons	222	15	9	Louisa-street.
	402	5	7	Fereday-street.
	164	18	0	Wardley-street.
	385	8	6	Victoria-street.
Jos. Dickinson	217	8	0	Louisa-street.
	364	10	2	Fereday-street.
	156	6	6	Wardley-street.
	387	5	2	Victoria-street.
W. Armstrong, Manchester-rd., Walkden*	227	14	6	Louisa-street.
	351	13	2	Fereday-street.
	155	18	1	Wardley-street.
	353	11	6	Victoria-street.

* Accepted for each contract.

WORTHING.—For erecting a Post Office, Worthing. Mr. R. Singer Hyde, architect, Worthing :—

Longley & Co.	£5,720	Blaker & Son	£4,486
Peters & Son	5,306	Crouch	4,303
Wallis	5,034	Cook	4,303
Sittar & Evershed	4 707	W. W. Sandell	4,196
Slaymaker & Harlow	4,675	Jobbins, Lee-on-the-Solent*	4,060
F. Sandell & Sons	4,675		

* Accepted at a reduced sum.

TO CORRESPONDENTS.

J. P. B. (Too late; next week). V. W. L. (Amount should have been stated). J. S. (Below our limit).

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TERMS OF SUBSCRIPTION.

"THE BUILDER" (Published Weekly) is supplied DIRECT from the Office to residents in any part of the United Kingdom, at the rate of 19s. per annum PREPAID. To all parts of Europe, America, Australia, New Zealand, India, China, Ceylon, &c., 26s. per annum. Remittances (payable to DOUGLAS FOURDRINIER) should be addressed to the publisher of "THE BUILDER," No. 46, Catherine-street, W.C.

SUBSCRIBERS in LONDON and the SUBURBS (by prepaying at the Publishing Office, 19s. per annum or 4s. 9d. per quarter), can ensure receiving "The Builder," by *Friday Morning's Post*.

THE BATH STONE FIRMS, Ltd.
BATH,
FOR ALL THE PROVED KINDS OF
BATH STONE.
FLUATE, for Hardening, Waterproofing, and Preserving Building Materials.

HAM HILL STONE.
DOULTING STONE.
The Ham Hill and Doulting Stone Co.
(Incorporating The Ham Hill Stone Co. and C. Trask & Son The Doulting Stone Co.).
Chief Office :—Norton, Stoke-under-Ham, Somerset.
London Agent :—Mr. E. A. Williams, 16, Craven-street, Strand.

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 42, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. Asphalte Contractors to the Forth Bridge Co. [ADVT.

SPRAGUE & CO., Ltd.,
LITHOGRAPHERS,
Employ a large and efficient Staff especially fo Bills of Quantities, &c.
4 & 5, East Harding-st., Fetter-lane, E.C. [ADVT.

QUANTITIES, &c., LITHOGRAPHED accurately and with despatch.
METCHIM & SON { 8, PRINCES STREET, GT. GEORGE ST. WESTMINSTER
"QUANTITY SURVEYORS' DIARY AND TABLES," For 1898, price 6d. post 7d. In leather 1/- Post 1/1[ADVT.

C. B. N. SNEWIN
MAHOGANY, WAINSCOT, WALNUT,
TEAK, VENEER, and TIMBER MERCHANT,
Nos. 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, & 17, BACK HILL, HATTON GARDEN, and 29, RAY STREET, FARRINGDON ROAD, E.C.
THE LARGEST STOCK OF ALL KINDS OF WOODS IN EVERY THICKNESS, DRY, AND FIT FOR IMMEDIATE USE.
Telephone, No. 374 Holborn. Tele. Address: "SNEWIN, London."

J. J. ETRIDGE, Jr.
SLATE MERCHANT,
SLATER and TILER.
ESTIMATES GIVEN FOR
SLATING AND TILING,
To be executed by Contract in any part of ENGLAND.
Penrhyn - Bangor,
Oakeley - Portmadoc,
And other description of Slates Ready for immediate delivery to any Railway Station.
Applications for Prices, &c., to
BETHNAL GREEN SLATE WORKS,
BETHNAL GREEN, LONDON, E.

THE
French Asphalte
COMPANY,
Suffolk House, Cannon-street, E.C.
SUPPLY THE BEST MATERIAL AND WORKMANSHIP FOR BUILDINGS, DAMP COURSES, AREAS, ROOFS, WASHHOUSE AND DAIRY FLOORS, &c., &c.
This Asphalte was chosen to be laid at Sandringham, on the new General Post Office, and other important buildings.

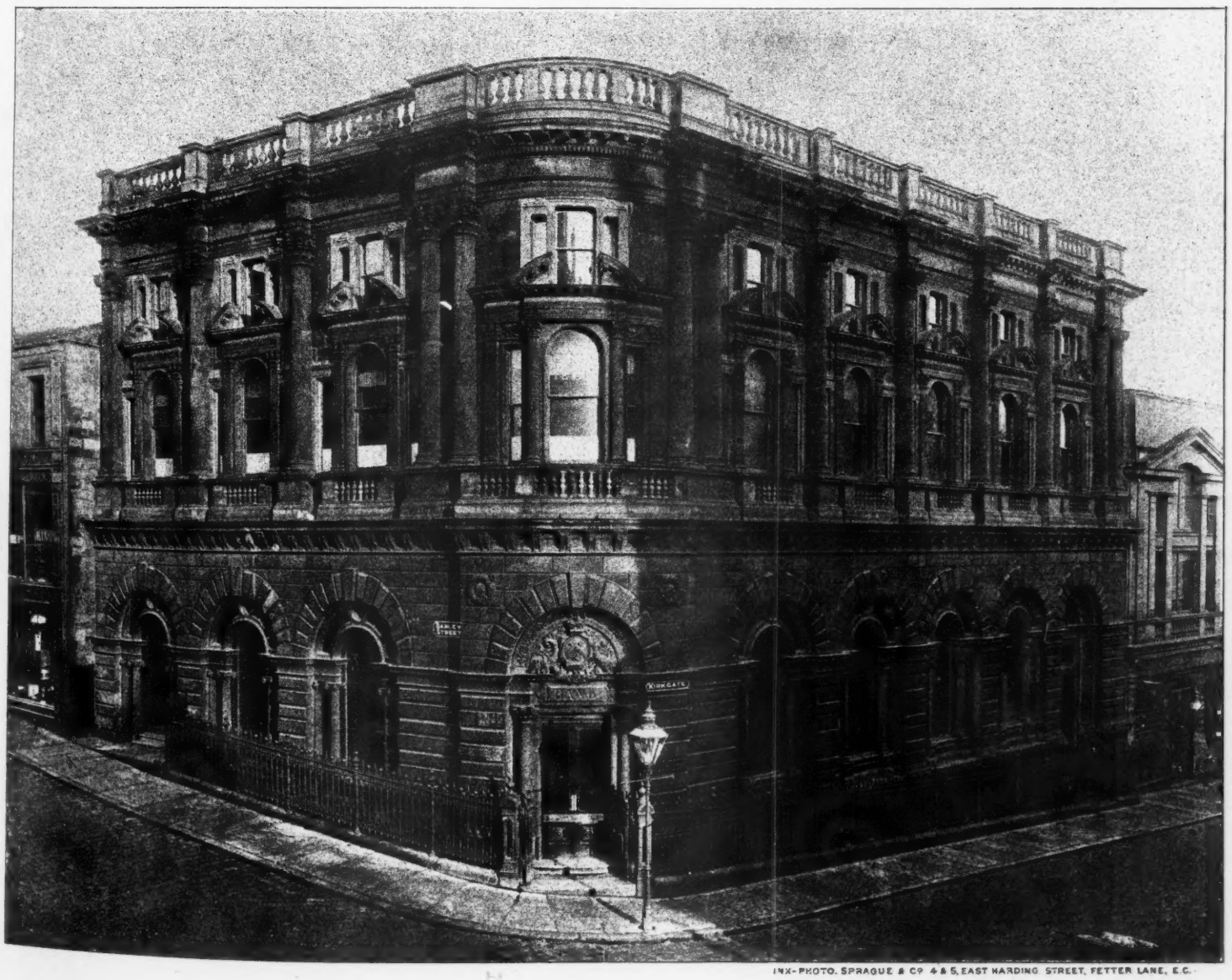
TWELVE GOLD AND SILVER MEDALS AWARDED.
IRON CISTERNS.
F. BRABY & CO.
VERY PROMPT SUPPLY.
LARGE STOCK READY.
Particulars on application.
CYLINDERS FOR HOT-WATER CIRCULATION.
LONDON: 352 to 364, EUSTON-ROAD, N.W., and 218 and 220, HIGH-STREET, BOROUGH, S.E.
LIVERPOOL: 6 and 8, HATTON GARDEN.
GLASGOW: 47 and 49, ST. ENOCH-SQUARE.
BRISTOL: ASHTON GATE WORKS, CORONATION-RD.

INX-PHOTO. SPRAGUE & CO 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

THE YORKSHIRE PENNY BANK.—(Mr J. Ledingham.)

BRADFORD ARCHITECTURE.

ST. GEORGE'S HALL.—(Messrs. Lockwood & Mawson.)

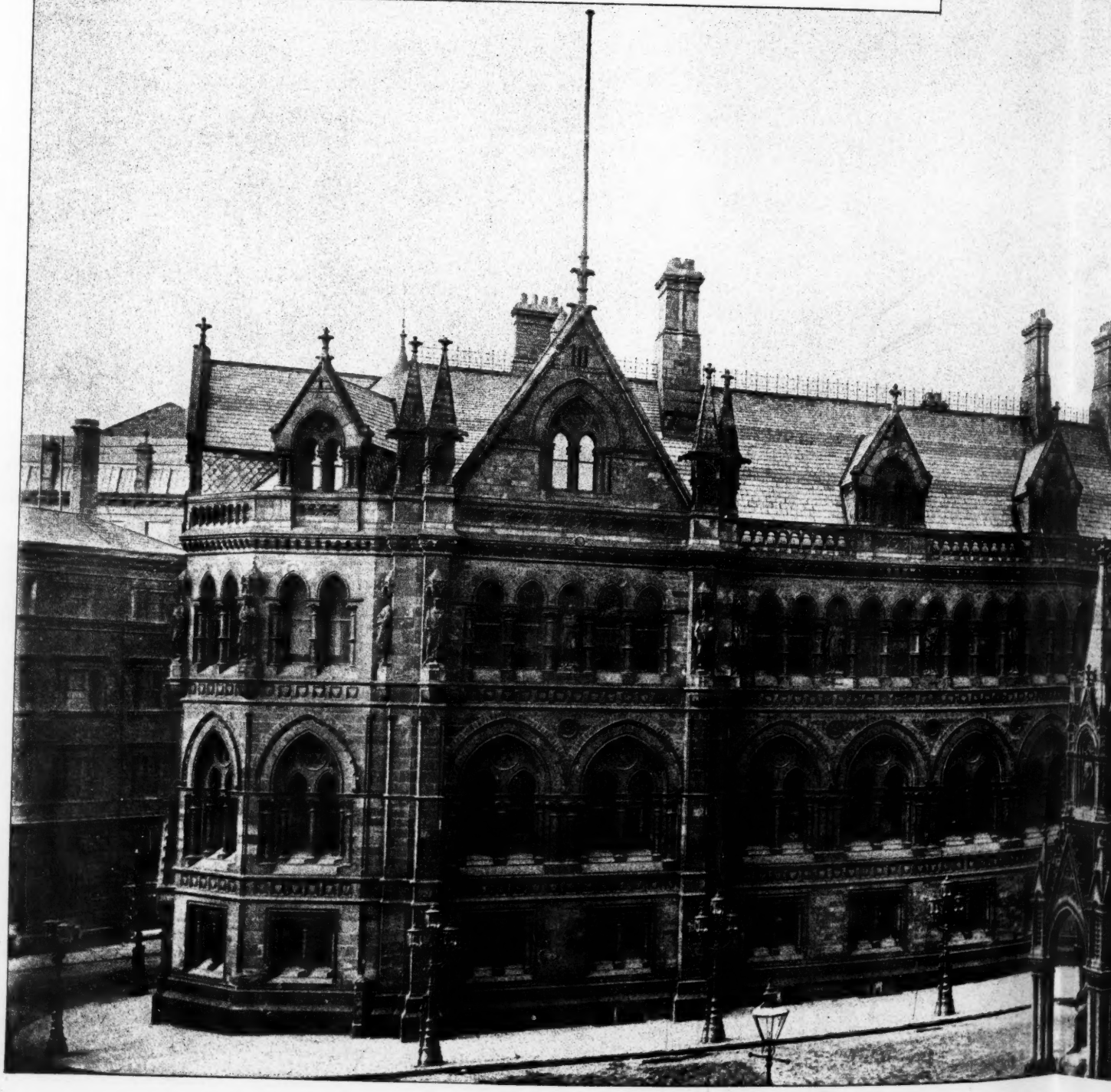


INK-PHOTO. SPRAGUE & Co. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

THE BRADFORD BANKING COMPANY.—(Messrs. Andrews & Delaunay.)

BRADFORD ARCHITECTURE

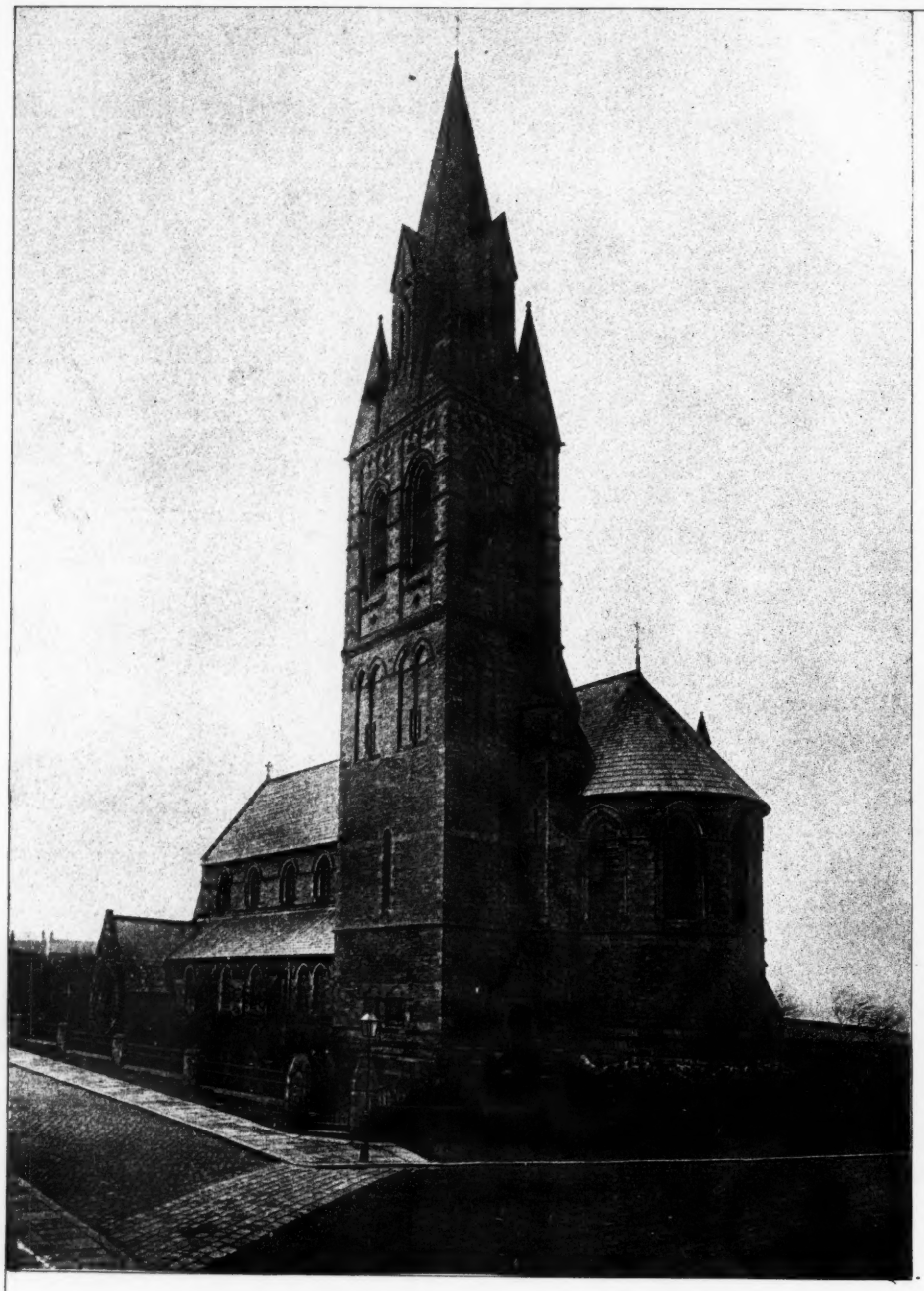
MARKET STREET, SHOWING THE EXCHANGE.



BRADFORD ARCHITECTURE: THE TOWN HAL

INK-PHOTO. SPRAGUE & Co 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

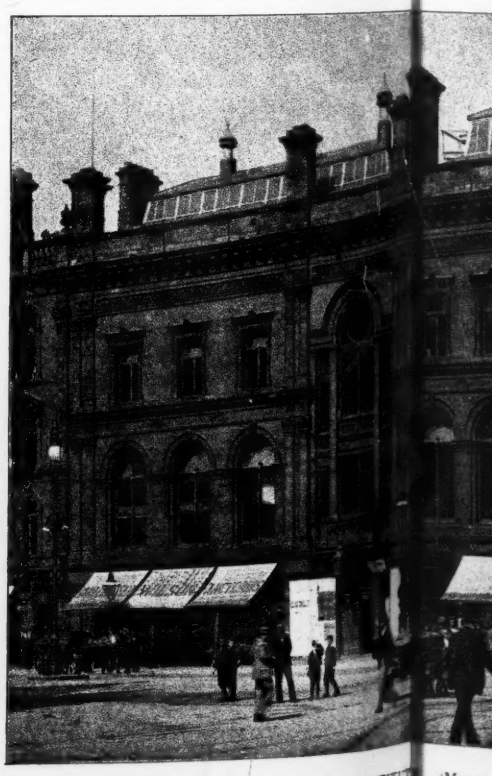
THE TOWN HALL.—(Messrs. Lockwood & Mawson.)



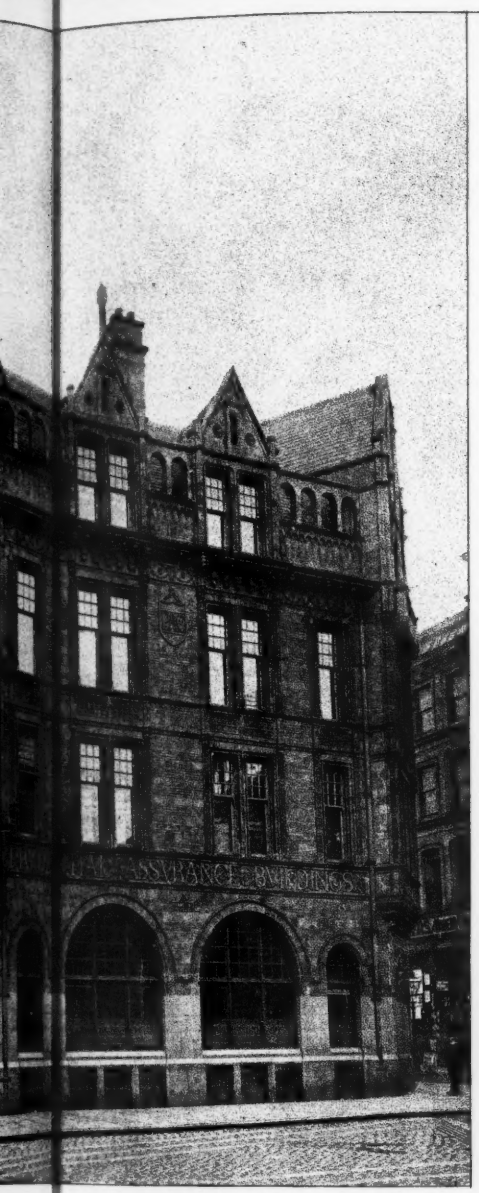
ST. JOHN THE EVANGELIST.—(Messrs. T. H. & F. Healey).

THE PRUDENTIAL ASSURANCE BUILDINGS.—(Me

THE POST OFFICE.

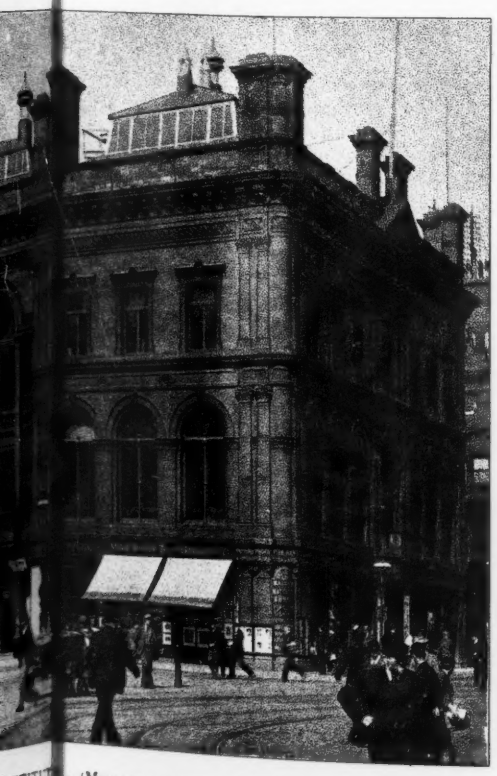


THE MECHANICS' INSTITUTE.—(Messr



E BUILDINGS.—(Messrs. A Waterhouse & Son.)

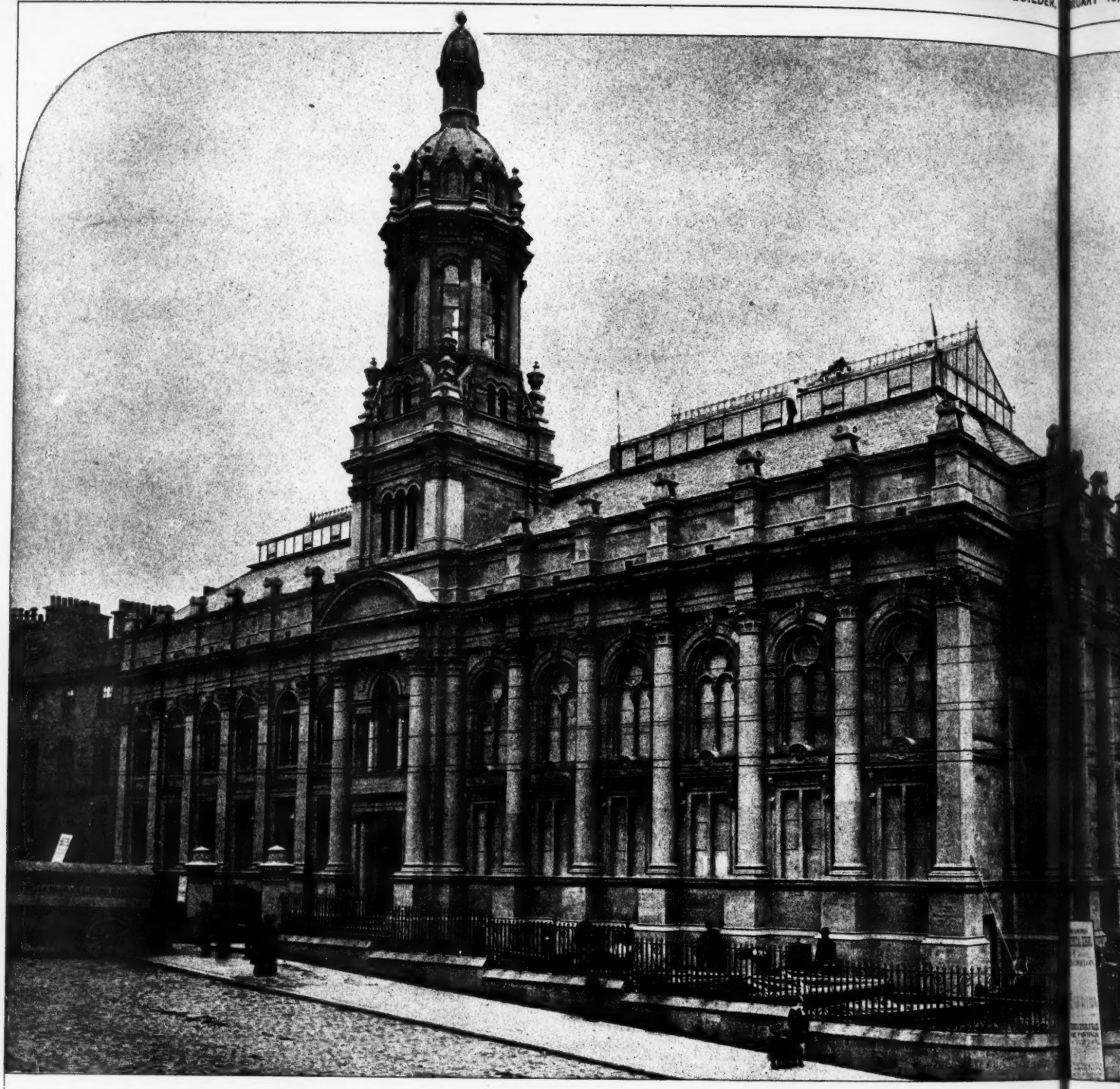
ALL SAINTS' CHURCH.—(Messrs. T. H. & F. Healey).



NSTITUTE.—(Messrs. Andrews & Pepper.)

ST. CLEMENT'S CHURCH.—(Mr. E. P Warren.)

194-PHOTO. SPRAGUE & Co 4 & 5, EAST HARDING STREET FETTER LANE, E.C.



THE TECHNICAL COLLEGE.—(Mr. T. C. Hope.)

THE MARKET.—(Messrs. Lockwood & Mawson.)

LONDON AND MIDLAND BANK.—(Mr. J. Ledingham.)

INX-PHOTO. SPRAGUE & Co 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.